H.H.RASHID BIN HUMAID AL NUAIMI	**Eng. Adnan Saffarini Office** Architects & Engineering Consultants	GCC

Page 1 of 2	Doc Ref.:	EAS-RMA	Form sheet Title:	**Request For Material Approval**

R.M.A No.	EAS-G.C.C.-RMA-30 00	Rev.	**02**	Date	**Thursday, 04 May 2023**

☐ New Submittal ☐ Re-Submittal

Project Title	**PALACE EXTENSION (G+01)**	Plot No.	0506
Employer	H.H.RASHID BIN HUMAID AL NUAIMI	Location	Ajman Beach Palace
Consultant	M/s Eng. Adnan Saffarini Office (EAS)	Contractor	M/s GINCO CONTRACTING COMPANY
Consultant's Eng.	Eng. MEER	Consultant's MEP Eng.	
Sub-contractor	Exclusive swimming pools	Trade	

Description / Technical Literate / Material Submittal for:

Electro Mechanical submittal for swimming pool

ATTACHMENTS ☐ Sample ☐ Technical Date ☐ QA/QC Reports ☐ Certificates ☐ Method Statement ☐ Others

Area of Application / Location

Drawings Ref.			**Copy Attached for Reference**
Specification Ref.		B.O.Q. Ref.	
Origin:	UAE	Manufacturer Name	
Local Agent:			
Tel:	043477117	Email	excllpool@emirates.net.ae

CONTRACTOR`S ATTESTATION

Material / Submittal Comply with Specifications ☐ Yes ☐ Alternative

If Alternative, State Details:

Requested By Contractor	**Received by Consultant**
Name: Er. fahad	Name: Eng. Meer
Signature:	Signature:
Date: 04/ 5 / 2023 Time: ___:___ PM/ AM	Date: 08 / 05 / 2023 Time: ___:___ PM/ AM

GCC CONTRACTING (BRANCH OF GINCO SHARJAH L.L.C)
P.O.Box: 115190, Dubai - U.A.E.
SITE OFFICE
GS-325

H.H.RASHID BIN HUMAID AL NUAIMI Saffia Palace	Swimming Pool materials **Eng. Adnan Saffarini Office** Architects & Engineering Consultants	GCC

Page 2 of 2	Doc Ref.:	EAS-RMA	Form sheet Title:	**Request For Material Approval**

EAS-GCC-RMA-30 Rev:2 : 4-5-23

Consultant's Comments (Project Manager / Resident Engineer)

Mech: Appved As Per attached sheets (4 Pages)
Subject to tender dwgs, specs and local authorities
& successful T&C.
4/6/23

-* Finishes items, subject to Eferee approval. (I.D Consultant,

Approval Status:

☐ Approved
☒ Approved As noted
☐ Re-Submit As noted
☐ Rejected

this APP. only for Swimming Pool

Name of Consultant's Representative: A.A.N

Signature:

Date: 6/6/2023 Time: ___:___ PM/ AM

Received by Contractor

Name of Contractor's Representative:

Signature:

Date: / /20 Time: ___:___ PM/ AM

RECEIVED
GCC CONTRACTING
Date: 07 JUN 2023
Sign.: ....

ELEC : * Any selected items shall be According to
1) APP. Quotation
2) APP. Shop. dwgs
* final APPROVAL for Light. Fitting According to I.D. Consultant APP.
* final APPROVAL subjected to T&C APP.

H.H.RASHID BIN HUMAID AL NUAIMI	**Eng. Adnan Saffarini Office** Architects & Engineering Consultants	GCC

Page 1 of 2	Doc Ref.:	EAS-RMA	Form sheet Title:	**Request For Material Approval**	

R.M.A No.	EAS-G.C.C.-RMA-30 00	Rev.	**01**	Date	**Monday, 30 January 2023**

☐ New Submittal ☐ Re-Submittal

Project Title	**PALACE EXTENSION (G+01)**	Plot No.	0506
Employer	H.H.RASHID BIN HUMAID AL NUAIMI	Location	Ajman Beach Palace
Consultant	M/s Eng. Adnan Saffarini Office (EAS)	Contractor	M/s GINCO CONTRACTING COMPANY
Consultant's Eng.	Eng. MEER	Consultant's MEP Eng.	
Sub-contractor	Exclusive swimming pools	Trade	

Description / Technical Literate / Material Submittal for:

Electro Mechanical submittal for swimming pool

ATTACHMENTS ☐ Sample ☐ Technical Date ☐ QA/QC Reports ☐ Certificates ☐ Method Statement ☐ Others

Area of Application / Location

Drawings Ref.		**Copy Attached for Reference**	
Specification Ref.		B.O.Q. Ref.	
Origin:	UAE	Manufacturer Name	
Local Agent:			
Tel:	043477117	Email	excllpool@emirates.net.ae

CONTRACTOR`S ATTESTATION

Material / Submittal Comply with Specifications ☐ Yes ☐ Alternative

If Alternative, State Details:

RR

Requested By Contractor	**Received by Consultant**
Name: Er. fahad	Name:
Signature:	Signature:
Date: 30/ 1/ 2023 Time: ___:___ PM/ AM	Date: / / 20 Time: ___:___ PM/ AM

SITE OFFICE GS-325

RECEIVED
ENG. ADNAN SAFFARINI OFFICE
Date: 30 JAN 2023
Sign.: ....

Consultant's Comments (Project Manager / Resident Engineer)

1) Heat Pump Capacity shall be as per signed agreement
g (31 kw), and not 26 kw proposed
Model no to be revised to (31 kw)

Approval Status:

☐ Approved

☐ Approved As noted

☒ Re-Submit As noted

☐ Rejected

2/2/23

Name of Consultant's Representative:

Eng. meer

Signature:

Date: 02 / 02/2023 Time: ___:___ PM/ AM

Received by Contractor

Name of Contractor's Representative:

Andrews

Signature:

Date: 03/ 02/20 Time: ___:___ PM/ AM

RECEIVED
GCC GCC CONTRACTING
Date: 03 FEB 2023
Sign.: ....

H.H.RASHID BIN HUMAID AL NUAIMI	**Eng. Adnan Saffarini Office** Architects & Engineering Consultants	GCC

Page 1 of 2	Doc Ref.:	EAS-RMA	Form sheet Title:	**Request For Material Approval**

R.M.A No.	EAS-G.C.C.-RMA-30 00	Rev.	**00**	Date	**Wednesday, 31 August 2022**
	☐ New Submittal	☐ Re-Submittal			

Project Title	**PALACE EXTENSION (G+01)**	Plot No.	0506
Employer	H.H.RASHID BIN HUMAID AL NUAIMI	Location	Ajman Beach Palace
Consultant	M/s Eng. Adnan Saffarini Office (EAS)	Contractor	M/s GINCO CONTRACTING COMPANY
Consultant's Eng.	Eng. MEER	Consultant's MEP Eng.	
Sub-contractor	Exclusive swimming pools	Trade	

Description / Technical Literate / Material Submittal for:

Electro Mechanical submittal for swimming pool

Attachments ☐ Sample ☐ Technical Date ☐ QA/QC Reports ☐ Certificates ☐ Method Statement ☐ Others

Area of Application / Location

Drawings Ref.		**Copy Attached for Reference**	
Specification Ref.		B.O.Q. Ref.	
Origin:	UAE	Manufacturer Name	
Local Agent:			
Tel:	043477117	Email	exclpool@emirates.net.ae

Contractor's Attestation

Material / Submittal Comply with Specifications ☐ Yes ☐ Alternative

If Alternative, State Details:

RR

Requested By Contractor	**Received by Consultant**
Name: Er. fahad	Name:
Signature:	Signature:
Date: 31/ 8/ 2022 Time: ____:____ PM/ AM	Date: / / 20 Time: ____:____ PM/ AM

GCC CONTRACTING (BRANCH OF GINCO SHARJAH L.L.C) SITE OFFICE GS-325 P.O.Box 115190 Dubai - U.A.E.

RECEIVED
ENG. ADNAN SAFFARINI OFFICE
Date: 01 SEP 2022
Sign:

H.H.RASHID BIN HUMAID AL NUAIMI Swimming Pool		Eng. Adnan Saffarini Office Architects & Engineering Consultants	GCC
Page 2 of 2	Doc Ref.:	EAS-RMA -30	Form sheet Title: **Request For Material Approval**

31-8-22

Consultant's Comments (Project Manager / Resident Engineer)

① Submit detailed Calculations for Cooling load

② Submit detailed calculation for heating loads, including Convection / Evaporation / Radiation / Conduction

③ Submit detailed calculation for head of Pumps

Approval Status: ☐ Approved ☐ Approved As noted ☒ Re-Submit As noted ✓ ☐ Rejected 4/9/2022	**Name of Consultant's Representative:** [illegible] Resubmit Signature: Date: 13 / 9 / 2022 Time: ___:___ PM/ AM
Received by Contractor	**Name of Contractor's Representative:** Fahad Signature: Date: 15 /09 /2022 Time: ___:___ PM/ AM

④ Submit detailed Calculation of Dosing Pump Chlorine

⑤ Attach Shop drawing to show the different equipment of Pumps / filters / Chlorine Vessels / ... e

for ELEC

- * Attach APP. Quotation with submittal. * control Panel details
- * List of materials & Quantities According to APP. dwgs & APP. Quotation

13-9-22

Resubmit

PROPOSED SWIMMING POOL AND WATER FEATURES FOR H.H RASHID BIN HUMAID AL NUAIMI AT AJMAN BEACH BALACE, UAE

MEP TECHNICAL SUBMITTAL – SWIMMING POOL

NO.	DESCRIPTION	QTY
1	750 mm Ø filter / Brand: Astral - Spain / Code: 00500	01 Nos.
2	2.0 HP filter pump / Brand: Astral - Spain / Code: 65566	02 Nos.
3	3 tread, 316 Stainless steel ladder / Brand: Astral - Spain / Code: 05477	01 Nos.
4	Maintenance Kit:	
	Vacuum Head / Brand: Astral - Spain / Code: 01353	01 Nos.
	Vacuum Hose 15 meter / Brand: Astral - Spain / Code: 01375	01 Nos.
	Telescopic Handle / Brand: Astral - Spain / Code: 01365	01 Nos.
	Leaf Skimmer / Brand: Astral - Spain / Code: 36614	01 Nos.
	Pool brush / Brand: Astral - Spain / Code: 36615	01 Nos.
	Thermometer Celsius / Brand: Astral - Spain / Code: 20594	01 Nos.
	Test Kit for Chlorine pH / Brand: Astral - Spain / Code: 25353	01 Nos.
5	16 W / 12V underwater light with S.S 316 face plate / Brand: Astral - Spain / Code: 71200	04 Nos.
6	Connection (deck box) with S.S 316 face plate / Brand: Astral - Spain / Code: 30825	02 Nos.
7	Transformer 400 VA / Brand: Astral - Spain / Code: 35385	01 Nos.
8	Overflow scum drain of ABS plastic with S.S 316 face plate / Brand: Astral - Spain / Code: 00302	08 Nos.
9	Vacuum point of S.S 316 / Brand: Astral - Spain / Code: 16328	01 Nos.
10	Return inlets of S.S 316 / Brand: Astral - Spain / Code: 16325	04 Nos.
11	Main drain of ABS plastic with S.S 316 face plate / Brand: Astral - Spain / Code: 00279	02 Nos.
12	Chlorine dosing system (manual) / Brand: Astral - Spain / Code: 24429	01 Nos.
13	Heater chiller / Brand: Aqua - Italy / Code: PH-02710-R410A	01 Nos.
14	1.0 HP booster pump for heater chiller / Brand: Astral - Spain / Code: 65562	01 Nos.

Mech: ok

PROPOSED SWIMMING POOL AND WATER FEATURES FOR H.H RASHID BIN HUMAID AL NUAIMI AT AJMAN BEACH BALACE, UAE

MEP TECHNICAL SUBMITTAL – SWIMMING POOL

NO.	DESCRIPTION	QTY
15	UPVC pipes class 'E' class, Modern (Atlas) plastics.	Job
16	Electrical armored cable (National cables)	Job

LAMINATED SAND FILTERS

Aster filter

ASTRALPOOL

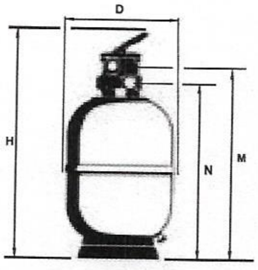
DESCRIPTION

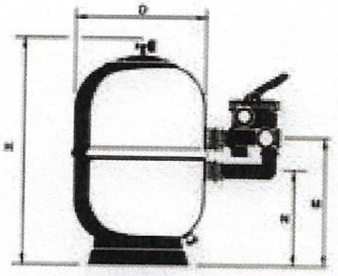
Filter laminated in polyester and fibreglass. Grey, polypropylene base, screw-free lid, cap for sand and water discharge, pressure gauge and side selector valve. Maximum pressure 2.5 bar. Maximum filtration speed 50/h/m². Complies with filtration requirements as per standard EN 16713-1. Sand and glass compatible (see page 188).

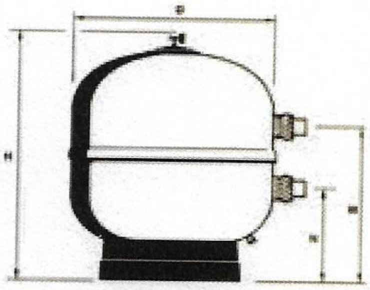
	Code	Standard Pack	Standard weight in kg	Standard volume in m³
With top mounted multiport valve				
5000 l/h Ø 350 mm outlet 1½"	30768	1	17	0.13
8000 l/h Ø 450 mm outlet 1½"	30769	1	20	0.23
9000 l/h Ø 500 mm outlet 1½"	30770	1	22	0.28
14000 l/h Ø 600 mm outlet 1½"	30771	1	27	0.39
15000 l/h Ø 650 mm outlet 1½"	30772	1	28	0.45
21000 l/h Ø 750 mm outlet 2"	33847	1	35	0.62
32000 l/h Ø 900 mm outlet 2"	33848	1	53	1.27
With side mounted multiport valve				
5000 l/h Ø 350 mm outlet 1½"	00497	1	18	0.13
8000 l/h Ø 450 mm outlet 1½"	00498	1	21	0.23
9000 l/h Ø 500 mm outlet 1½"	19781	1	23	0.28
12000 l/h Ø 550 mm outlet 1½"	32706	1	27	0.28
14000 l/h Ø 600 mm outlet 1½"	00499	1	28	0.39
15000 l/h Ø 650 mm outlet 1½"	21071	1	29	0.45
18000 l/h Ø 680 mm outlet 1½"	28479	1	30	0.46
21000 l/h Ø 750 mm outlet 2"	00500	1	37	0.62
32000 l/h Ø 900 mm outlet 2"	08133	1	55	1.27
Without multiport valve				
31000 l/h Ø 900 mm outlet 2½"	00501	1	53	1.27

UNE-EN 16713-01

Complies with Standard EN 16713-01







TECHNICAL FEATURES

	With Top mounted multiport valve							With multiport valve									Without valve
	30768	30769	30770	30771	30772	33847	33848	00497	00498	19781	32706	00499	21071	28479	00500	08133	00501
Ø D (mm)	350	450	500	600	650	750	900	350	450	500	550	600	650	680	750	900	900
H (mm)	910	965	960	1005	1060	1184	1344	780	795	770	825	850	880	915	945	1050	1050
M (mm)	740	795	790	835	890	973	1133	420	430	415	455	455	480	525	555	635	660
N (mm)	680	785	730	775	830	897	1057	295	305	290	330	330	355	400	325	365	390
Connections	1½"	1½"	1½"	1½"	1½"	2"	2"	1½"	1½"	1½"	1½"	1½"	1½"	1½"	2"	2"	2½"
Flow (m^3/h) at 50 $m^3/h/m^2$	5	8	9	14	15	21	31	5	8	9	12	14	15	18	21	30	30
Pool volume (m^3) (8 h)	40	64	72	112	120	168	240	40	64	72	96	112	120	144	168	240	240
Sand load (kg)	50	70	90	110	200	290	500	50	70	90	110	125	200	210	290	500	500
Grade 1 glass load (57011) (kg)	50	50	75	100	150	175	325	50	50	75	100	100	150	150	175	325	325
Grade 3 glass load (57013) (kg)	0	0	0	0	0	50	75	0	0	0	0	0	0	25	50	75	75
Maximum pressure (kg/cm^2)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Net weight (kg)	17	20	22	27	28	35	53	18	21	23	27	28	29	30	37	55	53
Package volume (m^3)	0.13	0.23	0.28	0.39	0.45	0.62	1.27	0.13	0.23	0.28	0.28	0.39	0.45	0.46	0.62	1.26	1.27

ASTRALPOOL

SELF-PRIMING PUMPS

Victoria Plus Silent

ASTRALPOOL

DESCRIPTION

A self-priming pump with single-phase and three-phase motors. A prefilter is mounted on the body of the pump to prevent foreign bodies from entering it that may damage its hydraulic parts. The motors supplied come with an IP-55 protection rating and have been prepared to withstand hot environments and high levels of humidity. GS marking. The main characteristics of Victoria Plus Silent are:

- Low noise level: between 61 dB and 70 dB.
- Easy to use: Prefilter cap with 2 levers included (no spanner needed).
- Compatibility: Fully compatible in pools fitted with a Victoria Plus pump.
- Larger front bearing for improved axial thrust.
- PVC accessories assembly included in pump.

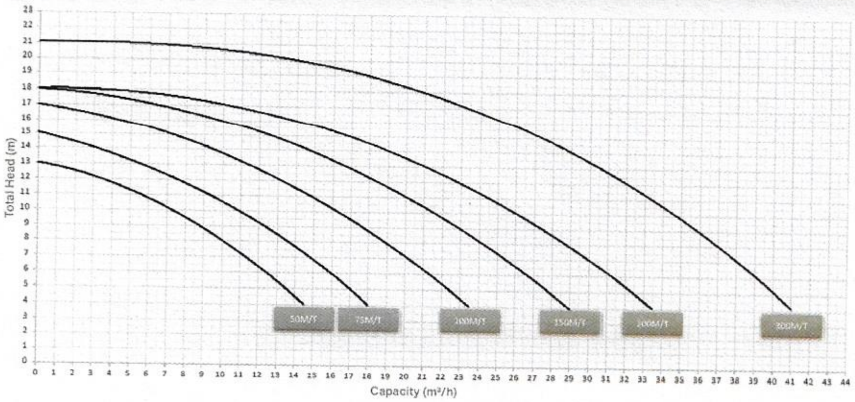
	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Victoria Plus Silent 50M	65557	1	12	0.07
Victoria Plus Silent 50T	65558	1	12	0.07
Victoria Plus Silent 75M	65560	1	13	0.07
Victoria Plus Silent 75T	65561	1	13	0.07
Victoria Plus Silent 100M	65562	1	14	0.07
Victoria Plus Silent 100T	65563	1	14	0.07
Victoria Plus Silent 150M	65564	1	17	0.07
Victoria Plus Silent 150T	65565	1	17	0.07
Victoria Plus Silent 200M	65566	1	18	0.07
Victoria Plus Silent 200T	65567	1	19	0.07
Victoria Plus Silent 300M	65569	1	23	0.07
Victoria Plus Silent 300T	65570	1	19	0.07

TECHNICAL FEATURES

REF	MODEL	Voltage	Flow at H_N	Nominal Head	Maximum Head	Maximum Flow	Motor Rated Output	Maximum Absorbed Power	Pipe Size
		U_N	Q_N	H_N	$H_{MAX.}$	$Q_{MAX.}$	P_{2N}	P_{1MAX}	D
		V	m³/h	m	m	m³/h	kW	kW	mm
65557	50M	230	7.5	10	13	14.5	0.38	0.58	D50
65558	50T	230/400	7.5	10	13	14.5	0.38	0.55	D50
65560	75M	230	11	10	15	18	0.56	0.72	D50
65561	75T	230/400	11	10	14	18	0.56	0.72	D50
65562	100M	230	16	10	17	23.5	0.75	0.98	D50
65563	100T	230/400	16	10	17	23.5	0.75	1.02	D50
65564	150M	230	21.5	10	18	29	1.12	1.40	D63
65565	150T	230/400	21.5	10	18	29	1.12	1.40	D63
65566	200M	230	26	10	18	33.5	1.49	1.80	D63
65567	200T	230/400	26	10	18	33.5	1.49	1.80	D63
65569	300M	230	35	10	21	41	2.24	2.59	D75
65570	300T	230/400	35	10	21	41	2.24	2.40	D75

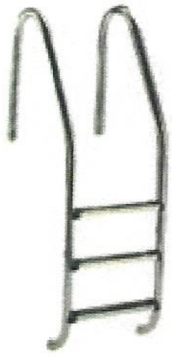
Maximum flow at Head of 4 m.c.w

PERFORMANCE



POOL ACCESS

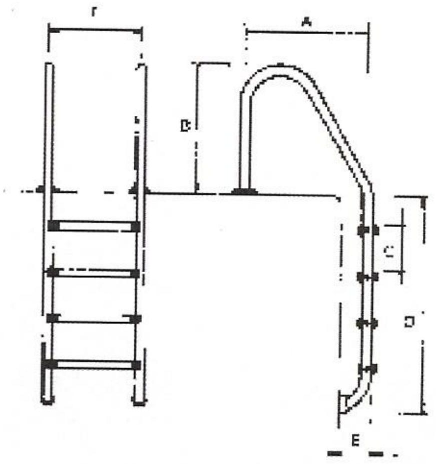
Standard model ladders



- In-ground pool ladder. Stainless steel Ø 43 mm pipe handrail.
- Stainless steel steps. Special non-slip design ensures safety.
- Supplied with anchoring fixtures for connection to an equipotential outlet.
- Trimmed faceplate.

TECHNICAL FEATURES

Steps	A	B	C	D	E	F
2	618	620	260	700	148	500
3	618	620	260	960	148	500
4	618	620	260	1220	148	500
5	618	620	260	1480	148	500



EN 16582-1:2015

Complies with Standard EN 16582-1:2015

Optional: American measurements without anchor point and optional plastic step.

Standard handrail ladder

with Luxe model step

ASTRALPOOL

DESCRIPTION

Rails & steps in AISI-316L.

GARANTIA 3 AÑOS YEARS GUARANTEE *

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
2 steps ladder	05476	1	9.8	0.07
3 steps ladder	05477	1	11.5	0.08
4 steps ladder	05478	1	14.0	0.08
5 steps ladder	05479	1	15.0	0.10

Standard handrail ladder

with Standard model step

ASTRALPOOL

DESCRIPTION

Rails & steps in AISI-304L.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
2 steps ladder	05488	1	9.6	0.07
3 steps ladder	05489	1	12.0	0.08
4 steps ladder	05490	1	15.0	0.09
5 steps ladder	05491	1	15.0	0.09

*** 1 additional year warranty. For more information see the warranty certificate in the manual.**

Shark pool cleaner - wing-nut or wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Shark Flexo pool cleaner	36618	6	9.9	0.04
Shark Oval pool cleaner	40997	5	6.4	0.04
Shark Triangular pool cleaner	36619	4	5.2	0.04

36618

40997

36619

36615

36616

36617

Shark brushes - wing-nut or wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Shark special bottom curved brush	36615	10	3.7	0.04
Shark bottom/walls curved brush	36616	15	4.2	0.04
Shark corner suction brush	36617	12	2.4	0.04

36613

36614

Shark leaf skimmers - wing-nut or wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Shark water surface leaf skimmer	36613	15	6.2	0.14
Shark deep water leaf skimmer	36614	15	6.5	0.14

38422 - 38423

Shark telescopic pole - wing-nut or wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Shark 1.8 - 3.6 m telescopic pole	38422	10	11.7	0.05
Shark 2.4 - 4.8 m telescopic pole	38423	10	14.4	0.06

Shark floating dispenser for 5 tablets

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Floating dispenser for 5 tablets 200 g Shark	36620	12	6.6	0.14

Shark submergible analogue thermometer

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Shark submergible analogue thermometer	36622	10	2.8	0.04

01353-01354-08661

Classic pool cleaner - wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Extruded aluminium pool cleaner				
1 ½" connection 350 mm	01353	4	11.8	0.04
2" connection 450 mm	01354	4	15.5	0.06
1 ½" connection 450 mm	08661	4	15.5	0.06

16601

01357

01358

Classic
public pool aluminium pool cleaner - wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length: 800 mm				
Drag with cable (00210 not included)	01357	1	13.0	0.03
With nozzle	16601	1	13.0	0.03
Length: 450 mm				
With nozzle 1 ½" - 2" connection	01358	4	13.6	0.05

01406

01404

Classic brushes - wishbone fixing

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
PP bristle 330mm straight brush	01406	20	2.8	0.04
Bottom/walls curved brush	01404	20	4	0.05
Floating line brush	11789	20	3.8	0.03

01398

01396

Classic leaf skimmers

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Wishbone fixing				
Water surface leaf skimmer	01398	20	4.2	0.12
Deep water leaf skimmer	01396	20	4.3	0.12
Wing-nut fixing				
Water surface leaf skimmer	01399	20	4.3	0.12
Deep water leaf skimmer	01397	20	4.4	0.12

MANUAL POOL CLEANERS - CLASSIC RANGE

Hose adapter

ASTRALPOOL

DESCRIPTION

For connecting wing nut assembly to clip hose or clip assembly to wing nut hose.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Adapts the wishbone handle connection to wing-nut connection	08465	35	2.55	0.01
Adapts the reinforced pole connection to wing-nut connection	17937	38	2.66	0.01

Hose adapter

ASTRALPOOL

DESCRIPTION

For connecting wing nut assembly to clip hose or clip assembly to wing nut hose.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Adapts the connection hose clip to wing nuts	14592	48	3.36	0.01

MANUAL POOL CLEANERS - CLASSIC RANGE

Thermometers

ASTRALPOOL

DESCRIPTION

Celsius & Fahrenheit scale.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
	20594	20	2.1	0.032

Hose cuffs

ASTRALPOOL

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Made in flexible blue PVC				
For Ø 38 mm (01372) hose Only for vac inlets 24415	07958	12	2.0	0.003
For Ø 38 mm hose (01372)	01385	12	2.0	0.003
For Ø 50 mm hose (01373)	01386	12	3.0	0.010
Made in flexible white PVC				
For Ø 38 mm hose (01374-01375 01376-01377-01378)	01387	12	2.0	0.030
For Ø 50 mm hose (01379)	01388	12	3.0	0.010

Floating suction hose

ASTRALPOOL

DESCRIPTION

Transparent blue Polyethylene hose.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Ø 38 mm (1½")	01372	30 m	8.0	0.108
Ø 50 mm (2")	01373	30 m	14.0	0.192

Floating suction hose

ASTRALPOOL

DESCRIPTION

Made of blue polyethylene. Includes terminals, except in the 30-m hose (01374, 01379).

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Ø 38 mm (1½")				
30 m	01374	1	12.0	0.192
15 m	01375	1	5.6	0.192
12 m	01376	1	4.5	0.192
10 m	01377	1	3.0	0.192
8 m	01378	1	3.0	0.192
Ø 50 mm (2")				
30 m	01379	1	15.0	0.240

Hose roller

ASTRALPOOL

DESCRIPTION

For hoses of up to 15 metres.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Hose roller	66042	1	2.4	0.05

Cabos telescópicos
Telescopic handles

Gama de cabos telescópicos adaptáveis a todos os modelos de aspiradores manuais, redes e escovas AstralPool. Fabricados em alumínio anodizado e material plástico. Possibilidade de ligação mediante sistema de porcas ou clip. A gama é composta de diferentes medidas, segundo as necessidades requeridas pelo tamanho da piscina, onde poderá encontrar os modelos fixos ou telescópicos.

Range of telescopic handles, adaptable for use with all manual pool cleaners, leaf skimmers and brushes by AstralPool. Made of anodized aluminium and plastic, and attached by wing-nuts or clip-ins. The range comes in three sizes, according to pool size requirements, from which you can choose fixed or telescopic models.

01364

Fixo para ligação porcas de orelhas
Fixo 2,5 m. em alumínio.

Fixed for wing-nut fastening
Fastening 2,5 m. in aluminium.

Telescópico para
Ligação com porcas de orelhas

Telescopic for
wing-nut fastening

Cód. / Code	Medida / Size
01359	2 - 4 m in aluminium / 2 - 4 m em alumínio
01360	2,5 - 5 m in aluminium / 2,5 - 5 m em alumínio

Telescópico reforçado para
ligação com porcas de orelhas

**Reinforced telescopic
for wing-nut fastening**

Cód. / Code	Medida / Size
01361	5 m in aluminium / 5 m em alumínio
15838	7,5 m in aluminium / 7,5 m em alumínio
01362	10 m in aluminium / 10 m em alumínio
01363	13 m in aluminium / 13 m em alumínio

01365

Fixo para ligação a clip.
Fixo 2,5 m. em alumínio.

Fixed for clip-in
Fixed 2,5 m. in aluminium.

Telescópico para
ligação clip
Com punho.

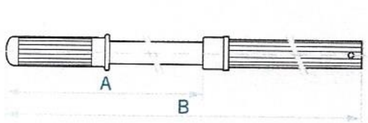
Telescopic for
clip-in fastening
With handgrip.

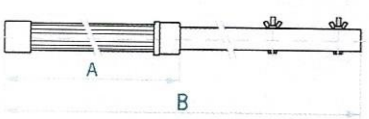
Cód. / Code	Medida / Size
06664	1,8 - 3,6 m in aluminium / 1,8 - 3,6 m em alumínio
06665	2,4 - 4,8 m in aluminium / 2,4 - 4,8 m em alumínio

Telescópico para
ligação clip
Com punho.

**Telescopic for clip-
in fastening**
With handgrip.

Cód. / Code	Medida / Size
01366	2 - 4 m in aluminium / 2 - 4 m em alumínio
01367	2,5 - 5 m in aluminium / 2,5 - 5 m em alumínio





		Ligação clip / Clip-in fastening					Ligação porcas de orelhas / Wing-nut fastening						
Código / Code		01365	06664	06665	01366	01367	01359	01360	01361	01362	01363	01364	15838
A			1,8	2,4	2	2,5	2	2,5	2,5	5	6,5		3,75
B		2,5	3,6	4,8	4	5	4	5	5	10	13	2,5	7,5
Telescópico Telescopic	Normal Normal		●	●	●	●	●	●					
	Reforçado Reinforced								●	●	●		●
Fixed / Fixo		●										●	

AstralPool water testers

Total chlorine and pH

comparison test kit

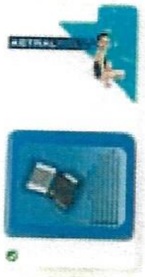
DESCRIPTION

Comes in a modern, practical design. Packaged in a blue plastic box. Comes with OTO and liquid phenol.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
25353	25	4.8	0.019

Chlorine, bromine and pH

comparison test kit

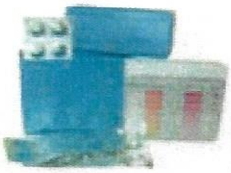


DESCRIPTION

Comes in a modern, practical design. Packaged in a blue plastic box. Comes with phenol and DPD tablets.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
26155	25	4.8	0.019

Liquid active oxygen tester



DESCRIPTION

For testing the residual liquid active oxygen in the water.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
26082	1	15.4	0.0265

Reagent refills

28050

28051

16623

16610

	Format	Code	Standard Pack	Standard weight in kg	Standard volume in m³
OTO refill	15 cm³	28050	50	2.1	0.020
Phenol refill	15 cm³	28051	50	2.1	0.020
OTO refill	250 cm³	16623	20	5.5	0.010
Phenol refill	250 cm³	16624	20	5.5	0.010
1 OTO and 1 phenol refill	15 cm³	16610	50	3.5	0.020

The transition to the new brand's visuals may take some time. It is possible to get products with visuals which have not yet been updated.

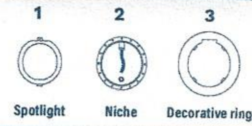
LumiPlus Flexi projectors

Components required to install a LumiPlus Flexi

Choose amongst the components according to your requirements:

- **New-build pools - FlexiNiche or FlexiRapid: 1+2+3**
- **New-build pools - FlexiSlim: 1+3**
- **Replacement without changing niche: 1+3**

LumiPlus Flexi is made up of 3 components



The 3 components are required for the proper installation of FlexiNiche and FlexiRapid.

1 Spotlight

	Code V1	Code V2
White AC LumiPlus Flexi spotlight	71200	71233
Warm White AC LumiPlus Flexi spotlight	71200WW	71233WW
White DC LumiPlus Flexi spotlight	71201	71202
White DC LumiPlus Flexi spotlight High Efficiency	71236	
Warm White DC LumiPlus Flexi spotlight	71201WW	71202WW
RGB AC LumiPlus Flexi spotlight (1)	71203	71204
Wireless AC LumiPlus Flexi spotlight (2)	71205	
Wireless AC 1 PL LumiPlus Flexi spotlight + 1 Control Motion (2)	71206	
Wireless AC 2 PL LumiPlus Flexi spotlight + 1 Control Motion (2)	71207	
RGB DMX AC LumiPlus Flexi spotlight (1)		71208

All spotlights come with a 2.5 m power cable. Power cables of 5 m, 10 m and 15 m available on request.
(1) Choose the most suitable control system (see control systems section).
(2) Compatible with ABS trim solutions.

2 Installation

Niches (*)	Code Niche Ø180	Code Niche Ø230
Niche in ABS for concrete pools	59813	00349
Niche S.S. for concrete pools /prefabricated pools		54102 / 54103
Niche in ABS for prefabricated pools with inserts	59814	00364 / 17805
Niche in ABS for prefabricated pools without inserts	59815	28887 / 72261
Niche in ABS for panel pools with inserts / without inserts		23671 / 23670
Inlet		
Inlet for concrete pools with 1 ½" threaded Ø63 PN-6 piping		35418
Inlet for concrete pools with 1 ½" threaded Ø63 PN-10 piping		35421
Inlet for liner prefabricated pools with 1 ½" thread		27084
Inlet for polyester prefabricated pools		38805

Other Ø230 and Ø180 niches also available (see catalogue).
For FlexiSlim version installed in concrete + liner pools, Kit 71234 should be used to complete installation (not delivered with).
* Suitable to use ABS niches with Flexi ABS decorative ring.

3 Decorative ring with fitting

	Code
FLEXINICHE	
White	71209
Beige	71209CL090
Light Grey	71209CL129
Anthracite grey	71209CL144
Stainless steel AISI 316-L embellisher with ABS body	71209CLSS
Full Stainless Steel AISI 316-L	73440
FLEXISLIM	
White	71210
Beige	71210CL090
Light Grey	71210CL129
Anthracite grey	71210CL144
FLEXIRAPID	
White	71211
Beige	71211CL090
Light Grey	71211CL129
Anthracite grey	71211CL144

KITS : DECORATIVE RING + SPOTLIGHT

	Code White AC	Code White DC
FlexiNiche: White decorative ring + white spotlight	71212	71213
FlexiSlim: White decorative ring + white spotlight	71214	71215
FlexiRapid: White decorative ring + white spotlight	71216	71217
FlexiNiche : Full SS Projector body + white spotlight	73442	73441

AC - Alternating current   DC - Direct current

TRANSFORMERS AND ACCESSORIES

Transformer protection boxes

ASTRALPOOL

DESCRIPTION

Made of zinc plated steel plate, painted finish.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
For transformer 00383	00386	1	1.15	0.01
For transformer 00384	00387	1	1.57	0.01
For transformer 00385	00388	1	3.00	0.01

Connection box with security cover

ASTRALPOOL

30825CL090

30825

30825CL144

30825CL129

DESCRIPTION

Manufactured in ABS, made up of three ¾" inlets/outlets M-25 and ¾" thread connections.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
White	30825	12	4.65	0.030
Beige	30825CL090	12	4.65	0.030
Light Grey	30825CL129	12	4.65	0.030
Anthracite	30825CL144	12	4.65	0.030

Connection boxes for gluing pipes Ø50 mm

ASTRALPOOL

65215CL090

65215

65215CL144

65215CL129

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
White	65215	8	3.8	0.030
Beige	65215CL090	8	3.8	0.030
Light Grey	65215CL129	8	3.8	0.030
Anthracite	65215CL144	8	3.8	0.030

Connection box

ASTRALPOOL

DESCRIPTION

In AISI-316 stainless steel. Two PG 15 thread side outlets with two PG16 to M25 converters.

¾" BSP threaded bottom connection.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Connection box	00393	1	0.21	0.002

Transformers for pool and fountain lighting

More compact.
More functional.
Specially designed for lighting up fountains and pools.

DESCRIPTION

- Suitable for all types of circuit board.
- Quick and easy installation.
- Connection via terminals protected against indirect contacts.
- Up to 40 m between the spotlight and transformer.
- Made in compliance with Standard UNE-EN-61558-2-6.
- IP-20 protection rating.
- Age-resistant housing.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
100 VA 230 V to 12 V transformer	00383-1369	-	-	-
300 VA 230 V to 12 V transformer	00384-1369	-	-	-
600 VA 230 V to 12 V transformer	00385-1369	-	-	-

Transformers

DESCRIPTION

Made in compliance with standard EN 60742.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
130VA from 230V to 12V	00383-4146	6	15.0	0.011
300VA from 230V to 12V cable length up to 35 m	71436	4	21.0	0.012
600VA from 230V to 12V cable length up to 25 m	00385-4146	2	19.0	0.012

Alternative transformer range, on enquiry.

Encapsulated security

transformer with IP-65 protection rating for pools

DESCRIPTION

Manufactured according to the rules UNE-EN 61558 and directive CE.

- Bodywork has IP-657 protection rating.
- Class II transformer. Total protection against all electric shocks.
- Self-extinguishing bodywork, as per IEC 695-2-1
- Frequency of 50-60 Hz.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
130 VA from 220-240 V to 12 V	35807	1	3.2	0.02
400 VA from 220-240 V to 12-17 V	35385	1	6.8	0.04
800 VA from 280-240 V to 12-17 V	35386	1	10.4	0.04

Concrete pool - Inlets

Suction inlet

DESCRIPTION

To be glued to a Ø 63 mm pipe. Body and grille in ABS plastic, screws in stainless steel. Application on wall. Its characteristics make this nozzle particularly suitable for overflow channels. Maximum flow rate: 4.5 m^3/h.

Code	Standard Pack	Standard weight in kg	Standard volume in m^3
00302	12	3.1	0.016

Hydromassage kit

DESCRIPTION

Made up of a return inlet and wall conduit fitted with an air inlet and a venturi. Two wall conduit lengths available. Ø 50 mm water connection pipe and Ø 20 mm air suction pipe.

	Code	Standard Pack	Standard weight in kg	Standard volume in m^3
Hydromassage kit for concrete pools: Length of wall conduit 190 mm				
White	32113	12	3.5	0.021
Beige	32113CL090	12	3.5	0.021
Light Grey	32113CL129	12	3.5	0.021
Anthracite Grey	32113CL144	12	3.5	0.021
Length of wall conduit 280 mm				
White	32370	12	3.6	0.021
Beige	32370CL090	12	3.6	0.021
Light Grey	32370CL129	12	3.6	0.021
Anthracite Grey	32370CL144	12	3.6	0.021
Hydromassage kit for concrete pools with a liner: Length of wall conduit 190 mm				
White	31443	12	3.5	0.021
Beige	31443CL090	12	3.5	0.021
Light Grey	31443CL129	12	3.5	0.021
Anthracite Grey	31443CL144	12	3.5	0.021
Length of wall conduit 275 mm				
White	32371	8	3.5	0.021
Beige	32371CL090	8	3.5	0.021
Light Grey	32371CL129	8	3.5	0.021
Anthracite Grey	32371CL144	8	3.5	0.021

Concrete pool - Stainless Steel Inlets

Return inlet with Ø 20 mm ball

ASTRALPOOL

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

1½" external thread. Manufactured in AISI-316L stainless steel. Maximum recommended flow of 4.5 m³/hour according to EN 16582-1 and EN 16713-2 standards if installed at a maximum of 500 mm below pool water level. Ø 20mm ball.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length 35 mm	32994	1	0.3	0.001
Length 50 mm	16325	1	0.3	0.001
Length 70 mm	16326	1	0.5	0.001

Return inlet with Ø 25 mm ball

ASTRALPOOL

Complies with Standard
EN 13451-1-3

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

1½" external thread. Manufactured in AISI-316L stainless steel. Maximum recommended flow according to EN 13451-3 standard: 7 m³/h. Ø 25 mm ball.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length 35 mm	69874	1	0.3	0.001
Length 50 mm	69875	1	0.3	0.001
Length 70 mm	69876	1	0.5	0.001

Adjustable pool floor return inlet

ASTRALPOOL

Complies with Standard
EN 13451-1-3

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

2" external thread. Made of AISI-316L stainless steel. Can be fitted in concrete and prefabricated pools. The water flow can be adjusted by loosening or tightening the central screw. Max. recommended flow rate complaint with standard EN 13451-3: 14 m³/h.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
15839	1	0.9	0.002

Suction nozzle

ASTRALPOOL

Complies with Standard
EN 13451-1-3

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

1½" external thread. Manufactured in AISI-316L stainless steel. Push-fit connection 05684 required (see page 362).

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length 50 mm	16328	1	0.2	0.001
Length with cover: 50 mm	21644	1	0.3	0.001

Concrete pool - Stainless Steel Inlets

Return inlet with Ø 20 mm ball

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

1½" external thread. Manufactured in AISI-316L stainless steel. Maximum recommended flow of 4.5 m³/hour according to EN 16582-1 and EN 16713-2 standards if installed at a maximum of 500 mm below pool water level. Ø 20mm ball.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length 35 mm	32994	1	0.3	0.001
Length 50 mm	16325	1	0.3	0.001
Length 70 mm	16326	1	0.5	0.001

Return inlet with Ø 25 mm ball

Complies with Standard
EN 13451-1-3

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

1½" external thread. Manufactured in AISI-316L stainless steel. Maximum recommended flow according to EN 13451-3 standard: 7 m³/h. Ø 25 mm ball.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length 35 mm	69874	1	0.3	0.001
Length 50 mm	69875	1	0.3	0.001
Length 70 mm	69876	1	0.5	0.001

Adjustable pool floor return inlet

Complies with Standard
EN 13451-1-3

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

2" external thread. Made of AISI-316L stainless steel. Can be fitted in concrete and prefabricated pools. The water flow can be adjusted by loosening or tightening the central screw. Max. recommended flow rate complaint with standard EN 13451-3: 14 m³/h.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
15839	1	0.9	0.002

Suction nozzle

Complies with Standard
EN 13451-1-3

Complies with Standards
EN 16582-1
EN 16713-2

DESCRIPTION

1½" external thread. Manufactured in AISI-316L stainless steel. Push-fit connection 05684 required (see page 362).

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Length 50 mm	16328	1	0.2	0.001
Length with cover: 50 mm	21644	1	0.3	0.001

Concrete pool - Main drain grilles

UNE-EN 16582-1

Complies with Standards EN 16582-1

Ø 200 drain grille in ABS

ASTRALPOOL

DESCRIPTION

Ring support and grille in white ABS. Supplied with grille fixing screws. This grille is for suction chamber done on site.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
00280	10	3.0	0.031

UNE-EN 13451-1-3

Complies with Standard EN 13451-1-3

UNE-EN 16582-1 EN 16713-2

Complies with Standards EN 16582-1 EN 16713-2

Ø 200 drain grille in stainless steel

ASTRALPOOL

DESCRIPTION

Support ring in white plastic, grille in AISI-316L stainless steel. Supplied with grille fixing screws. Maximum recommended flow rate: 13 m³/h.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
00279	10	6.0	0.02

Ø 300 drain grille in stainless steel

ASTRALPOOL

DESCRIPTION

Support ring in aluminium, grille in AISI-316L stainless steel. Supplied with grille fixing screws. Maximum recommended flow rate: 27 m³/h.

Code	Standard Pack	Standard weight in kg	Standard volume in m³
00282	4	5.8	0.02

Drain grille in stainless steel

ASTRALPOOL

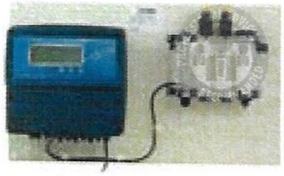
DESCRIPTION

Designed for concrete pools. Support frame and grille in polished stainless steel. Supplied with fixing screws. Other sizes can be made to order.

Size (mm)	Max. recommended flow rate	Code	Standard Pack	Standard weight in kg	Standard volume in m³
AISI-304L					
200 x 200	15 m³/h (0.5 m/s)	00284	1	1.2	0.01
300 x 300	43 m³/h (0.5 m/s)	00285	1	2.2	0.01
400 x 400	83 m³/h (0.5 m/s)	00286	1	4.0	0.03
500 x 500	136 m³/h (0.5 m/s)	00287	1	4.5	0.04
AISI-316L					
200 x 200	15 m³/h (0.5 m/s)	30764	1	1.2	0.01
300 x 300	43 m³/h (0.5 m/s)	30765	1	2.2	0.01
400 x 400	83 m³/h (0.5 m/s)	30766	1	4.0	0.03
500 x 500	136 m³/h (0.5 m/s)	30767	1	4.5	0.04

Controller

ASTRALPOOL



Fluidra Connect compatible

DESCRIPTION

The panels in the CONTROLLER range are fully equipped and assembled systems. They are therefore ideal for use in water treatment.

Their simple, compact design makes installation and start-up extremely easy.

They come with all of the components and accessories required for rapid assembly. All assemblies are made of PVC sheets, in various sizes depending on the model.

General technical features

- Range of available sizes depending of the sensor selected.
- Range available for free chlorine: 0-2, 0-5 0-10, 0-20 and 0-200 ppm.
- pH range: 0–14.
- ORP range: +/-1500 mV.
- Temperature range: 0–50°C.
- Measurement of stable chlorine with low pH dependence.
- Self-calibration of all sizes.
- Alarm signal if water flow is insufficient.
- Instrument with IP65 protection rating.
- 250 V-10 A relays for connecting dosing pumps or salt chlorinators.
- 4-20 mA analogue outlets with repeat signal or manifold for proportional pumps.
- Power supply: 230 V / 50 Hz.
- Setpoints and programmable alarms.
- Pump pause function during calibration and for stopping flow.
- Temperature readings and readjustment (automatic with PT100 sensor included).
- Three types of setpoint settings. On/Off, Proportional in Time and Proportional by Pulses.
- RS485 communications port.

Components included in the assembly:

- Methacrylate sensor holder, with flow regulator, sample taking valve and flow sensor.
- Filter holder and 80 micron filter cartridge for water inlet.
- DPD calibration standard solutions.
- Assembly accessories, and instruction and installation manual.
- Sensors depending on version.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Controller pH / Redox	66178	1	-	-
Controller pH / Free Chlorine	66177	1	-	-
Controller pH / ORP / Free Chlorine	66176	1	-	-
Controller Free Chlorine	66175	1	-	-
pH/Amperometric-free chlorine sensor	66168	1	-	-
pH/ORP/Amperometric free chlorine sensor	66169	1	-	-
Controller pH / ORP / Free Chlorine / Total amperometric chlorine	66170	1	-	-

DOSING EQUIPMENT

3.5 kg Dossi-3

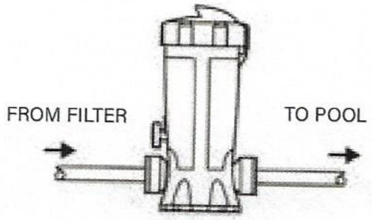
Chlorine and bromine feeder

DESCRIPTION

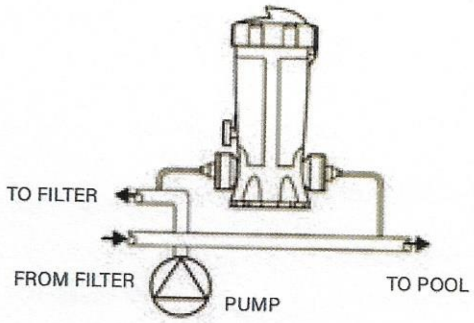
Chlorine and bromine feeder. Manufactured from unalterable plastic materials (ABS). Approximate capacity: 3.5 kg of tablets. Lid closing with double safety system. Easy to operate regulation valves. For pools up to 60 m³ with Chlorine and up to 30 m³ with bromine. Height: 405 mm.

	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Dossi-3 in-line For direct connection to pipework with 1½" connectors	24429	1	1.81	0.03
Dossi-3 off-line For by-pass connection with flexible tube	24430	1	1.90	0.031

Code 24429 IN-LINE

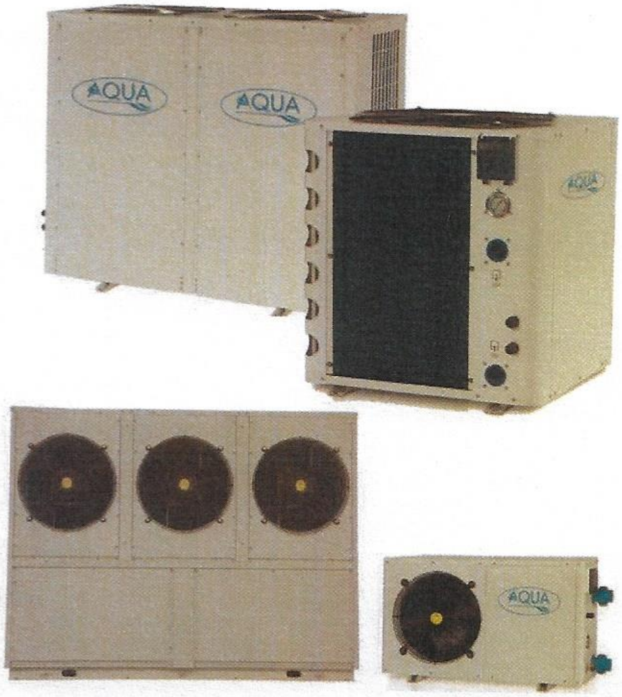


Code 24430 OFF-LINE



AQUA
INDUSTRIAL GROUP

TEMPERATURE CONTROL



Your global partner in high quality and strong innovation since 1974

AIR TO WATER HEATING / COOLING PUMP

ITALY, GREAT BRITAIN, SPAIN, TURKEY, UAE, INDIA, RUSSIA

AIR TO WATER HEATING / COOLING PUMP

Air/water heating/cooling pump is part of the AQUA product line, which indicates the swimming pool and SPA heat pump.
S[illegible]ing pool heat pump can be used for heating c[illegible]ing swimming pool, spa or some other open water system.
Water system pressure should be less than 3 bar. (Cannot be used for close water system such as air conditioning,ground source heating and so on.)

PRODUCT FEATURES

HIGH EFFICIENCY
Adopt heat pump for heating and the energy comes from ambient air. So its COP can reach 5.5

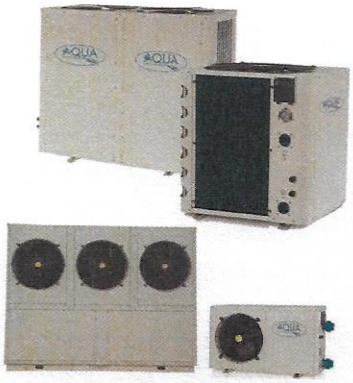
SAFETY
Water and electricity are completely separate. ECO friendly gas, no fire, no electricity leakage, safer than fuel burner or electrical heater.

ENVIRONMENTALLY FRIENDLY
Adopt R407C, R410-A, R22 as refrigerant, according to the requirements of EU Montreal Protocol.

CORROSION PREVENTION
The condenser uses titanium metal, its corrosion resistance is 4-5 times of ordinary copper tube, the corrosion ability of the unit is significantly improved, while the effective way to prevent fluoride leakage.
So the medium of heat exchange can also contain seawater, mild industrial water, etc.

INTELLIGENT DEFROSTING
By means of both mechanical and automatic control, defrosting can be operated in a shorter time to avoid severe attenuation of heating capacity in winter and not run when not necessary.

ANTIFREEZING CONTROL
The unit starts up automatic antifreezing control when shutdown (no power off), using of antifreezing heat exchanger, 10 freezing tests, no leakage..



VARIOUS PROTECTIVE MEASURES
- Lack-phase and anti-phase protection
- Self memory function when power off
- Overpressure protection
- Leakage refrigerant protection
- Water protection for unit
- Overcurrent protection
- Temperature over protection

ADVANCED CONTROL SYSTEM
- Displaying operating and trouble status.
- Checking real-time operation parameters etc.
- The cable length between controller and the unit can be up to 100m for lexible installation.
- Keep balance running of compressor
- Automatically adjusting capacity according to the change of water inlet the temperature.
- Can achieve the perfect docking with BMS. Realizing remote control based on user requirement for easy management and maintenance. And can realize multi unit modular operation

COMPRESSOR
AQUA products and the world famous brand compressor manufacturers (COPELAND\ GMCC) have good cooperation, so as to ensure the high quality of the machine.

HOW DOES THE UNIT WORK?

AS A CHILLER

1- STAGE ONE
The temperature of the hot gaseous refrigerant discharged from the compressor is much higher than the outside ambient air temperature. When the outside air passes across the condenser coil, the gaseous refrigerant transfers its heat to the air and condenses into liquid.

2- STAGE TWO
The liquid refrigerant passes through the capillary tube, reducing its pressure and temperature.

3- STAGE THREE
The low temperature refrigerant passes to the heat exchanger evaporator, where the actual heat transfer takes place: the refrigerant absorbs heat from the water pumped into the heat exchanger and evaporates, whereby the water temperature is reduced.

4- STAGE FOUR
The gas refrigerant is then sucked to the compressor and compressed, increasing its pressure and temperature, ready to start the whole cycle once again.

AS A HEAT PUMP

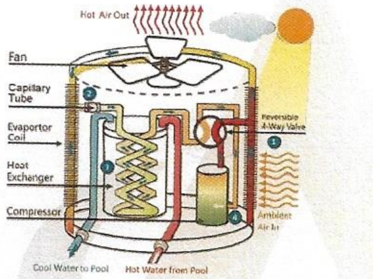
1- STAGE ONE
The heat transfer medium (the refrigerant) is colder than the outside air. As the outside air passes across the evaporator coil, the liquid refrigerant absorbs heat from the air and evaporates.

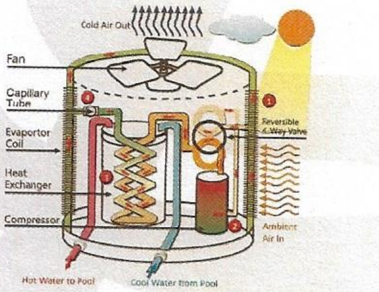
2- STAGE TWO
The gaseous refrigerant then passes to the compressor and is compressed. When compressed, the pressure is increased and the temperature of the vapor rises, effectively concentrating the heat.

3- STAGE THREE
The hot gaseous refrigerant passes to the heat exchanger condenser, where the actual heat transfer takes place: the intensely hot gaseous refrigerant transfers its heat to the water pumped into the heat exchanger and condenses back into a liquid.

4- STAGE FOUR
The liquid refrigerant then passes through an capillary tube, reducing its pressure and temperature, ready to start the whole cycle once again.

CAPILLARY TUBE





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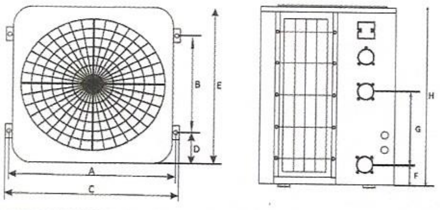
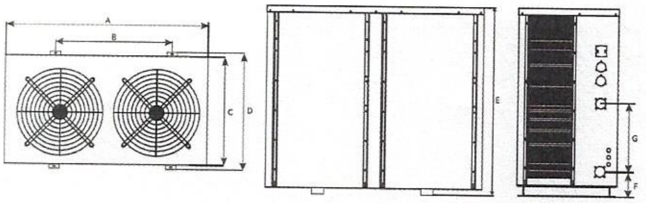
GAS TYPE – R410A

			PH-02620-R410A	PH-02625-R410A	PH-02630-R410A	PH-02640-R410A	PH-02650-R410A	PH-02660-R410A	PH-02670-R410A	PH-02700-R410A	PH-02710-R410A	PH-02712-R410A
Refrigerant												
Power supply		V/PH/Hz	220/1/50	220/1/50	220/1/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50	380/3/50
YL-H01-Heating: A24/W26°C	Heating capacity	kW	9.5	12	14	17	21	25	31	35	40	45
		BTU/h	32414	40944	47768	58004	71652	85300	105772	119420	136480	153540
	Power input	kW	1.7	2.2	2.5	3.1	3.8	4.6	5.7	6.4	7.3	8.2
	Current	A	7.9	9.9	4.6	5.5	6.8	8.1	10.3	11.4	13.0	14.6
	COP	W/W	5.5	5.5	5.5	5.5	5.5	5.5	5.4	5.5	5.5	5.5
YL-H02-Heating: A15/W26°C	Heating capacity	kW	8.1	10.2	11.9	14.5	17.9	21.3	26.4	29.8	34.0	38.3
		BTU/h	27552	34802	40603	49303	60904	72505	89906	101507	116008	130509
	Power input	kW	1.8	2.2	2.6	3.2	3.9	4.6	5.9	6.5	7.4	8.3
	Current	A	8.0	10.1	4.6	5.6	6.9	8.3	10.5	11.6	13.3	14.9
	COP	W/W	4.6	4.6	4.6	4.6	4.6	4.6	4.5	4.6	4.6	4.6
YL-C01-Cooling: A35/W30°C	Cooling capacity	kW	7	9.0	10	12	15	18	22	25	29	32
		BTU/h	23338	29480	34393	41763	51589	61416	76156	85982	98266	110549
	Power input	kW	1.8	2.3	2.7	3.2	4.0	4.7	5.9	6.5	7.5	8.4
	Current	A	8.3	10.6	4.7	5.8	7.2	8.5	10.5	11.7	13.4	15.0
	EER	W/W	3.75	3.70	3.80	3.80	3.76	3.80	3.80	3.85	3.85	3.85
YL-C02-Cooling: A46/W30	Cooling capacity	kW	5.814	7.3	8.6	10.4	12.9	15.3	19.0	21.4	24.5	27.5
		BTU/h	19837	25058	29234	35498	43851	52204	64732	73085	83526	93966
	Power input	kW	1.9	2.5	2.8	3.4	4.3	5.0	6.3	7.0	7.9	8.9
	Current	A	8.8	11.3	5.0	6.1	7.6	9.0	11.2	12.4	14.2	16.0
	EER	W/W	3.00	2.96	3.04	3.04	3.01	3.04	3.04	3.08	3.08	3.08
OPERATING	Water outlet temp.range	°C	15-40	15-40	15-40	15-40	15-40	15-40	15-40	15-40	15-40	5-40
	Ambient temp.range	°C	0-53	0-53	0-53	0-53	0-53	0-53	0-53	0-53	0-53	0-53
HEAT EXCHANGER	Compressor brand		GMCC	GMCC	COMPLAND	COMPLAND	COMPLAND	COMPLAND	COMPLAND	COMPLAND	COMPLAND	COMPLAND
	Compressor type		Rotary*1	Scroll*1	Scroll*1	Scroll*1	Scroll*1	Scroll*1	Scroll*1	Scroll*1	Scroll*2	Scroll*2
	Controller		Micro processor based digital controller with LCD touch screen disply			Micro processor based digital controller with LCD touch screen disply						
	Noise	dB(A)	51	53	53	53	54	55	55	58	59	59
MAX.	Power input	KW	3	4	5	6	7	9	11	12	14	16
	Current	A	12	15	7	8	10	12	15	17	20	22
KEY	Type		Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC	Titanium /PVC
	Standard water flow	m³/h	4.1	5.2	6.0	7.3	9.0	10.7	13.3	15.0	17.2	19.3
	Suggested water flow	m³/h	4-6	5-7	6-8	7-9	9-12	10-14	12-17	15-20	17-23	19-26
	Water pressure drop(max)	KPa	6	10	11	12	12	12	12	15	15	15
	Water pipe										PPR or PVC	PPR or PVC
	Water connection	mm	50	50	50	50	50	50	63	63	63	63
FAN	Position		Verticle	Verticle	Verticle	Verticle	Verticle	Verticle	Verticle	Verticle	Verticle	Verticle
	Material		Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic	Plastic
	Air flow	m³/h	2000	2600	3500	3500	5500	5500	5500	7500	9000	10000
ENSIONS (L x W x H)	Net	mm	688/696/737	688/696/737	764/686/941	764/686/941	764/686/941	764/686/941	810/810/1069	860/860/1284	1453/708/1084	1453/708/1084
	Shipping	mm	736/750/895	736/750/895	795/736/1100	795/736/1110	795/736/1110	795/736/1100	915/860/1230	932/912/1418	1520/760/1235	1525/760/1235
WEIGHT		kg	63/77	70/77	95/110	105/115	106/120	145/155	150/160	203/210	250/270	265/285
Loading qty		20/40/40hq	63/144/144	63/144/144	42/96/144	42/96/144	42/96/144	42/196/144	42/90/90		10/22/44	10/22/44

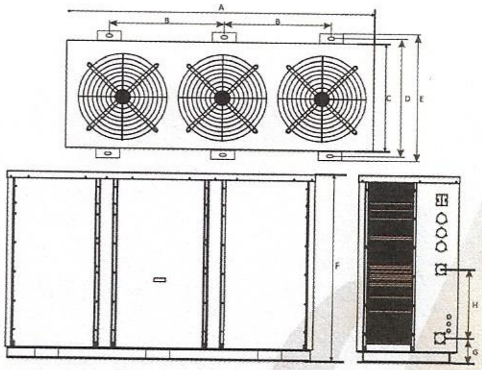
UNIT DIMENSIONS: PH



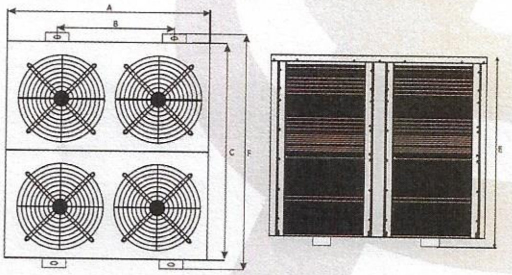
CODE	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
PH-02620	666	445	688	125	696	95	330	737
PH-02625								
PH-02630	724	450	764	118	686	106	420	941
PH-02640								
PH-02650								
PH-02660								
PH-02670	800	582	810	114	810	121	380	1069
PH-02700	838	581	860	140	860	158	420	1284



CODE	DIMENSIONS (mm)						
	A	B	C	D	E	F	G
02710	1453	830	656	708	1084	130	420
PH-02712							
PH-02713	1453	830	656	708	1284	130	500



CODE	DIMENSIONS (mm)							
	A	B	C	D	E	F	G	H
PH-02714	2145	900	690	-	764	1306	169	500
PH-02715								



CODE	DIMENSIONS (mm)				
	A	B	C	D	E
PH-02720	1420	1100	1420	1578	310

[illegible]
9/6/2023

3/4

AQUA Middle East FZC
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AQUA
INDUSTRIAL GROUP

أكوا الشرق الأوسط ش.م.ح
المنطقة الحرة بالحمرية - مستودع رقم ١J-٠٧/٤
ص.ب ٤٢٥٨٥ الشارقة - الإمارات العربية المتحدة
هاتف ٥٢٦٠٥٦٣ ٦ ٩٧١+ فاكس ٥٢٦٠٥٦٤ ٦ ٩٧١+

HEATING COOLING UNIT CALCULATION PROGRAM ACCORDING TO ASHRAE STANDARD
BASED ON AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS
HANDBOOK HVAC APPLICATION 49.22.
SWIMMING POOL

Ambient Conditions	Summer	Winter
Desired Pool Temperature, T1 (°C)	30	28
Initial Water Temperature, T2 (°C)	35	15
Max/Min Avg. Amb. Temperature, T3	45	17
Difference between T1 & T2, ΔT1 (°K)	-5	13
Difference between T1 & T3, ΔT2 (°K)	-15	11

Pool Length, L (m)	
Pool Width, W (m)	
Pool Surface Area, A (m^2)	43
Pool Depth, D (m)	
Pool Volume, V (m^3)	60
Density of Water, ρ (kg/m^3)	998
Specific Heat of Water, c_p (kJ/kgC)	4.18
Surface Heat Transfer Coefficient, U (kW/m^2C) - For Heating	0.06
Surface Heat Transfer Coefficient, U (kW/m^2C) - For Cooling	0.04
Wind Factor, F_w	1
Initial Heating or Cooling Period, θ	48

Formula of Energy Required for Initial Heating/Cooling, q_1 $= (V*c_p*\rho*\Delta T1) / (3600*\theta)$ (1)
Formula of Energy Required for Surface Loss, q_2 $= (U*A*\Delta T2*F_w) / 2$ (2)

q1: pool heat-up rate, KW
V: Pool Volume, m3
Cp: Specific Heat of Water = 4.1868 (kJ/kgC)
P: Density of water =998(kg/m^3)
T1: desired temperature
T2: initial temperature of pool, C
Θ: pool heat-up time

q2: heat loss from pool surface, KW
U: Surface Heat Transfer Coefficient = 0.06 (kW/m^2C) - For Heating
U: Surface Heat Transfer Coefficient = 0.04 (kW/m^2C) - For Cooling
A: Pool Surface Area, m2
T1: pool temperature, C
T3: Ambient temperature, C

Heating During Winter			Cooling During Summer		
Initial Heating Period, θ	48	hrs	Initial Cooling Period, θ	48	hrs
Energy for Initial Heating, q_1	18.83	kW	Energy for Initial Cooling, q_1	-7.24	kW
Energy for surface Loss, q_2	14.19	kW	Energy for surface Loss, q_2	-12.90	kW
Total Energy required	33.02	kW	Total Energy required	-20.14	kW

Because this equation applies to the coldest and hottest monthly tempreture, results calculated may not be economical.
Therefore, a value of one half the surface loss plus the heat up value yields a more viable heater outputs figures
Refer to ASHRAE applications chapter 48.19

CODE	AMBIENT 15C		AMBIENT 20C		AMBIENT 24C		AMBIENT 35C/W30	
	H KW	COP	H KW	EER	H KW	COP	C KW	EER
PH-02620	8.10	4.50	8.50	4.90	9.50	5.50	8.00	3.75
PH-02625	10.20	4.50	10.70	4.90	12.00	5.50	8.40	3.70
PH-02630	11.90	4.50	12.50	4.90	14.00	5.50	9.00	3.70
PH-02640	13.60	4.50	14.20	4.90	16.00	5.50	10.00	3.80
PH-02650	17.90	4.50	18.70	4.90	21.00	5.50	17.00	3.76
PH-02660	21.30	4.50	22.30	4.81	25.00	5.50	21.00	3.80
PH-02670	26.40	4.50	27.60	4.81	31.00	5.40	22.00	3.80
PH-02680	29.80	4.50	32.30	4.81	35.00	5.40	25.00	3.80
PH-02710	34.00	4.50	35.60	4.90	40.00	5.50	35.00	3.80
PH-02712	38.30	4.50	40.10	4.90	45.00	5.50	36.00	3.85
PH-02713	46.80	4.50	44.50	4.90	55.00	5.50	43.00	3.80

CODE	AMBIENT 40C/W30		AMBIENT 45C/W30		AMBIENT 50C/W30		FLOW M3/HR	
	C KW	EER	C KW	EER	C KW	EER	MIN	MAX
PH-02620	7.40	3.11	6.80	3.00	6.6	2.44	3.00	5.50
PH-02625	7.80	3.07	7.10	2.96	6.9	2.41	3.50	7.00
PH-02630	8.40	3.07	7.70	2.96	7.4	2.41	4.00	8.00
PH-02640	9.30	3.16	8.50	3.04	8.2	2.47	4.50	9.00
PH-02650	15.80	3.12	14.50	3.01	13.9	2.44	6.00	12.00
PH-02660	19.50	3.16	17.90	3.04	17.2	2.47	7.00	14.00
PH-02670	20.50	3.16	18.70	3.04	18	2.47	9.00	18.00
PH-02680	23.00	3.16	21.40	3.04	20	2.47	15.00	20.00
PH-02710	32.60	3.16	29.80	3.04	28.7	2.47	11.00	23.00
PH-02712	33.50	3.20	30.60	3.08	29.5	2.5	13.00	26.00
PH-02713	40.00	3.16	36.60	3.04	35.3	2.47	15.00	29.00

4/6/23

SELECTION	
CODE	PH-02710-R410A
QTY	1 No..

FOR, **M/S AQUA MIDDLE EAST FZC**

SELF-PRIMING PUMPS

Victoria Plus Silent

ASTRALPOOL

DESCRIPTION

A self-priming pump with single-phase and three-phase motors. A prefilter is mounted on the body of the pump to prevent foreign bodies from entering it that may damage its hydraulic parts. The motors supplied come with an IP-55 protection rating and have been prepared to withstand hot environments and high levels of humidity. GS marking. The main characteristics of Victoria Plus Silent are:

- Low noise level: between 61 dB and 70 dB.
- Easy to use: Prefilter cap with 2 levers included (no spanner needed).
- Compatibility: Fully compatible in pools fitted with a Victoria Plus pump.
- Larger front bearing for improved axial thrust.
- PVC accessories assembly included in pump.

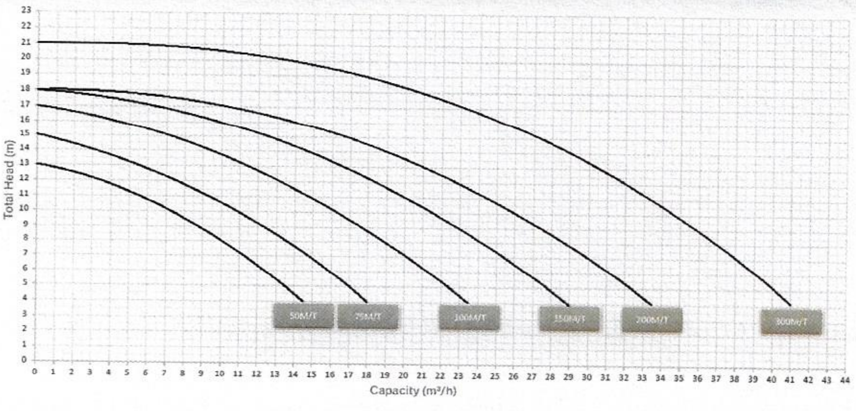
	Code	Standard Pack	Standard weight in kg	Standard volume in m³
Victoria Plus Silent 50M	65557	1	12	0.07
Victoria Plus Silent 50T	65558	1	12	0.07
Victoria Plus Silent 75M	65560	1	13	0.07
Victoria Plus Silent 75T	65561	1	13	0.07
Victoria Plus Silent 100M	65562	1	14	0.07
Victoria Plus Silent 100T	65563	1	14	0.07
Victoria Plus Silent 150M	65564	1	17	0.07
Victoria Plus Silent 150T	65565	1	17	0.07
Victoria Plus Silent 200M	65566	1	18	0.07
Victoria Plus Silent 200T	65567	1	19	0.07
Victoria Plus Silent 300M	65569	1	23	0.07
Victoria Plus Silent 300T	65570	1	19	0.07

TECHNICAL FEATURES

REF	MODEL	Voltage	Flow at H_N	Nominal Head	Maximum Head	Maximum Flow	Motor Rated Output	Maximum Absorbed Power	Pipe Size
		U_N	Q_N	H_N	$H_{MAX.}$	$Q_{MAX.}$	P_{2N}	P_{IMAX}	D
		V	m³/h	m	m	m³/h	kW	kW	mm
65557	50M	230	7.5	10	13	14.5	0.38	0.58	D50
65558	50T	230/400	7.5	10	13	14.5	0.38	0.55	D50
65560	75M	230	11	10	15	18	0.56	0.72	D50
65561	75T	230/400	11	10	14	18	0.56	0.72	D50
65562	100M	230	16	10	17	23.5	0.75	0.98	D50
65563	100T	230/400	16	10	17	23.5	0.75	1.02	D50
65564	150M	230	21.5	10	18	29	1.12	1.40	D63
65565	150T	230/400	21.5	10	18	29	1.12	1.40	D63
65566	200M	230	26	10	18	33.5	1.49	1.80	D63
65567	200T	230/400	26	10	18	33.5	1.49	1.80	D63
65569	300M	230	35	10	21	41	2.24	2.59	D75
65570	300T	230/400	35	10	21	41	2.24	2.40	D75

Maximum flow at Head of 4 m.c.w

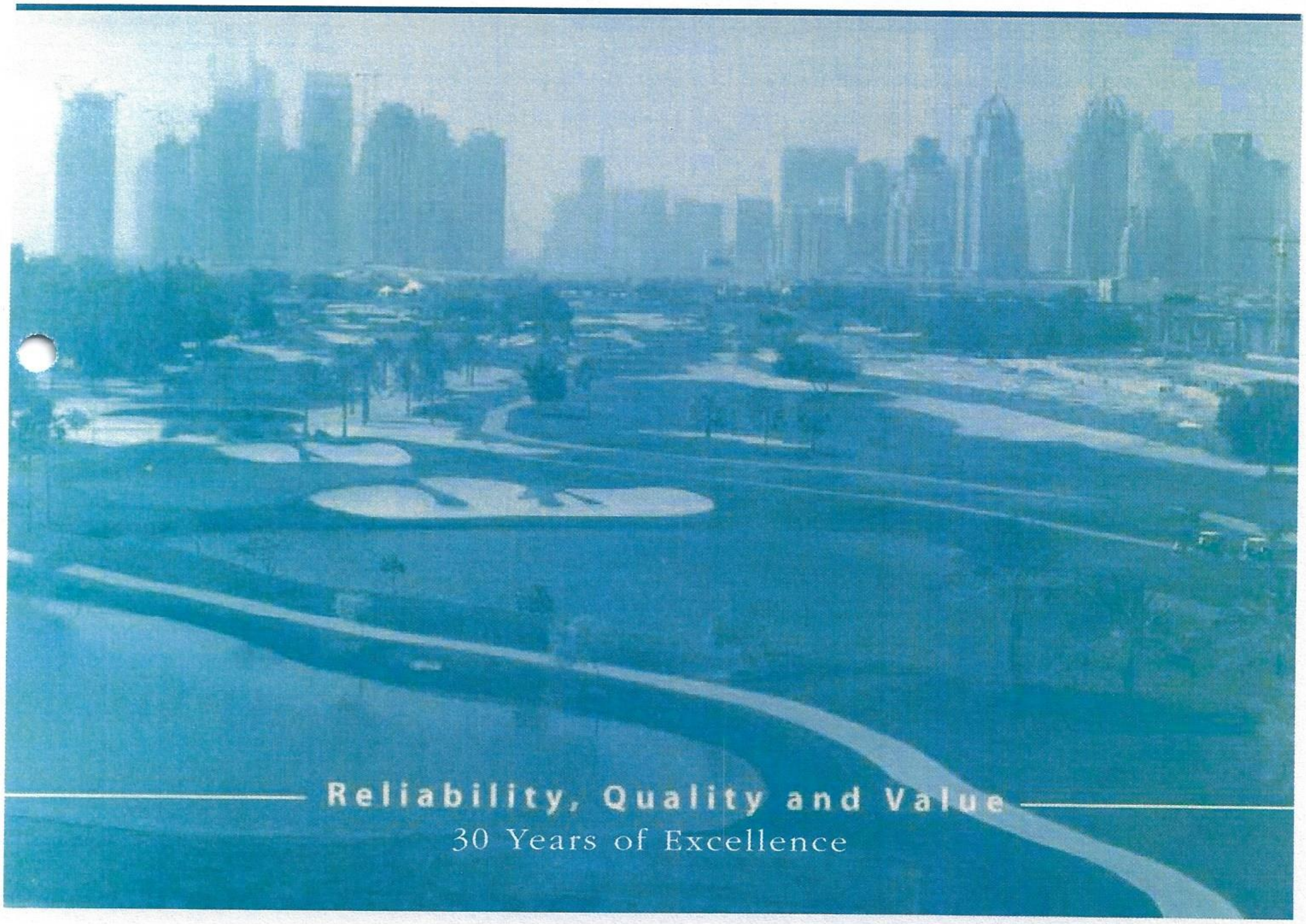
PERFORMANCE



MPI ATLAS

MODERN PLASTIC INDUSTRY L.L.C.

UPVC PRESSURE PIPES & FITTINGS



Reliability, Quality and Value

30 Years of Excellence

PROFILE

Introduction

Modern Plastic Industry is a part of AL SHIRAWI GROUP OF COMPANIES which is one of the largest and most diversified business conglomerates in the Arabian Gulf. From its inception in 1971 as a trading and contracting company, the Group has broadened its scope to encompass a cross section of products, services and industries ranging from printing, heavy fabrication, engineering, electromechanical, electronics, trucks and logistics.

Established in 1987, Modern Plastic Industry (MPI) has pioneered the manufacturing of UPVC pressure pipe fittings in the UAE. Today Modern Plastic has a wide range of SWR drainage, high pressure UPVC, CPVC, PP Compression Fittings and Pipes.

MPI products have been used extensively in the irrigation, construction, plumbing and landscaping industry and are playing a significant role in the development of the Gulf region and Middle East.

Subsequently the company started manufacturing Pressure Pipes and Fittings under the "Flowtech", & "Atlas" brands.

State-of-the-art facility

MPI UPVC Pressure Pipes and Fittings systems are manufactured in a state-of-the-art facility at Dubai Investment Park with state-of-the-art Microprocessor based Injection Moulding Machines and High Quality Precision Moulds for Fittings and High Quality Extrusion Machines for Pipes.

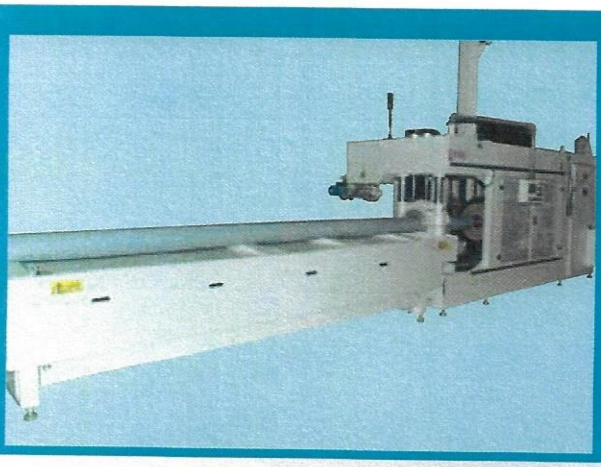
Technology is the backbone of ongoing development and the right design selection headed by a team of experienced and well-trained professionals complements the development process.

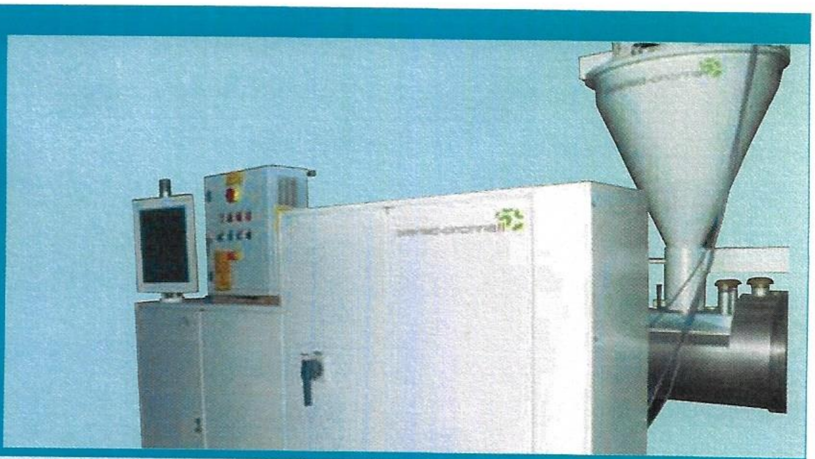
MPI has established an in-house tool room with the latest CNC machines and EDM machines, which are used to manufacture moulds as per the needs of the market.

Quality Control

As the UPVC High Pressure Pipe Fitting systems are specially designed to meet the harsh climate conditions of the Gulf region, MPI places emphasis on Quality, Reliability and Economy. Strict in-house Quality Control is backed by testing through independent laboratories of international repute to certify the quality of pipes and fittings.

MPI places great emphasis on customer satisfaction through quality products. The company's operational excellence is evident through its established Quality Management System, which complies with the ISO 9001-2008 standard, certified by British Standard Institute (BSI) UK. Also the company's product have been awarded the prestigious Kitemark certification of BSI, UK.





Kitemark

Modern Plastic is one of the largest companies in the Middle East to manufacture a wide range of UPVC High Pressure Pipes and Fittings Kitemark certified by BSI, UK.

WRAS

Modern Plastic manufactures wide range of UPVC high pressue pipes & fittings from material approved by WRAS.

In-House Quality Control

MPI's Products are tested to maintain the quality level in the permissible standard tolerances. We perform the tests as per relevant international standards (BS, DIN, ISO) and acceptance sampling procedures for production quality control and lot testing are done during all production operations.

The following quality control tests are performed in our in-house lab.

- Physical Test
- Dimensional Check
- Pressure Test
- Impact Test
- Heat Reversion test / Effect on Heating Test
- Dichloromethane test
- Vicat Softening Temperature Test
- Opacity Test

Apart from this, our products are being tested / assessed by BSI / other certification bodies on a regular basis.

A Complete Solution

With the growing demand to cater to the construction industry MPI has now introduced a complete range of UPVC Pressure Pipe sizes from $^1/_2$" to 12" conforming to British Standards BS EN ISO 1452-2 which superceds BS 3505 and sizes 20mm to 400mm conforming to DIN Standards DIN 8061 / 8062.

MPI's products are manufactured par excellence to the international standards and ensure a complete solution of "Piping System" for plumbing applications.

Global Presence

MPI has been the leader in the Gulf market mainly because it can offer the widest range of UPVC Pressure Pipes and Fittings which are specially designed to meet theharsh climatic conditions with more emphasis of Quality, Reliability and Economy. MPI is managed by a team of experienced and well trained professionals, and markets its range of products in the AGCC region, the Middle East, Africa, Europe and the Asian subcontinent.

TECHNICAL SPECIFICATION

UPVC PRESSURE PIPES AND FITTINGS

Description

"Atlas" Pipe Fittings are the "UPVC (Unplasticized Polyvinyl Chloride) Pressure Pipes and Fittings system" for cold water distribution, precisely designed for cold solvent welding as well as rubber ring jointing. The complete range can also be offered in CPVC (Chlorinated Polyvinyl Chloride) material for hot water distribution on special demand.

Brand & Marking

"Atlas" is a registered brand name of "Modern Plastic Industry LLC" within United Arab Emirates for all UPVC Fittings manufactured by MPI. All fittings are marked with the brand name , size, category and standard.

Standards

UPVC Pressure Pipes & Fittings are manufactured as per the following standards.

(i) Inch series (Imperial) :

- Pressure Pipes : BS EN ISO 1452-2 : 2000
  This standard supercedes BS 3505 : 1986

- Pressure Fittings : BS EN ISO 1452-3 : 2000
  This standard supercedes BS 4346-3 : 1982

(ii) Millimeter series (mm) :

- Pressure Pipes : DIN 8061 / 8062
- Pressure Fittings : DIN 8063
- Threaded joints are as per BS 21 & ISO 7 – 1 standards

Working Pressure

All Pipe Fittings depending upon the sizes are made for permissible continuous working pressure at 20°C (Based on water quality) as below :

Inch system Pipe Fittings : Maximum upto 15 Bar

Millimeter system Pipe Fittings : Maximum upto 16 Bar

Types & Ranges

Pressure Fittings :

- Elbow 90°, Female Elbow 90°, Elbow 45°, Reducing Female Elbow 90°, Tee, Female Tee & "Y"
- Reducing Tee, Reducing Female Tee, End Cap Plain, Threaded Cap, Male Thread Adaptor Female Socket Adaptor, Female Slip Adaptor, Socket, Reducer Bushes, Female Reducer Bushes Hex Nipples, Flanges, Unions, Repair Socket, Converter Socket, Reducing Socket.

Pressure Pipes :

- UPVC Pressure Pipes & Fittings are available in inch sizes from 1/2" to 12" and in Millimeter sizes from 20mm to 400mm.

Raw Material

The raw material used is 100 % UPVC virgin material with necessary additives / chemicals needed to facilitate the manufacturing process.

Appearance

The internal and external surface of the pipes are smooth, clean and free from surface defects.

Colour

The colour of the Pipe Fittings are Grey throughout the wall.

Effective Length of Pressure Pipes

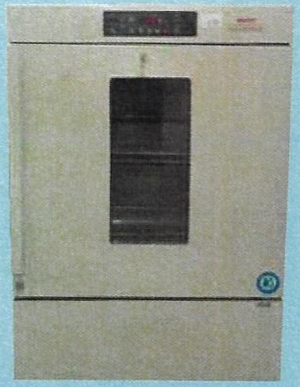
All pipes are manufactured in 4m and 6 / 5.8m lengths.

Pressure Pipe Sockets

The Pipes are supplied as follows.
The inch size pipes from 1/2" to 2" and "mm" size pipes from 20mm to 63mm are supplied with plain ends.
The inch size pipes from 2" to 12" and "mm" size pipes from 63mm to 400mm are supplied with Solvent cement socket or rubber ring socket.

General Physical Properties of UPVC

Sr. No	Characteristics	Value
1	Specific Gravity	1.41
2	Thermal Conductivity	160 w/m° C
3	Specific Heat	1040 J / Kg/°C
4	Flammability	UPVC is self – extinguishing and will not support combustion
5	Tensile Strength	> 45 MN/sq cm at 20° C
6	Vicat Softening Temperature	>80°C
7	Poissons Ratio	1:3
8	Termal Expantion Co efficient	0.07...0.08 Mm/mK
9	Heat Conductivity at 23 c	0.15 W/mk
10	Water absorabation at 23 c	<0.1%



Mechanical and Physical Properties : UPVC Pipes

Sr. No	Characteristics	Value	Value
1	Impact Strength	TIR <10% at 0° C	EN 744
2	Vicat Softening Temperature	>80°C	EN 727
3	Longitudinal Reversion	<5 % at 150° C	EN 743 (Method B ; Air)
4	Resistance to Dichloromethane Test	No attack at any part of the surface of pipe at 15°C	EN 580
5	Opacity	Shall not transmit >0.2% of visible light	EN 578
6	Resistance to Internal Pressure	No failure during the test period of 1 hr at 20°C ; 42 Mpa	EN 921

Mechanical and Physical Properties : UPVC Fittings

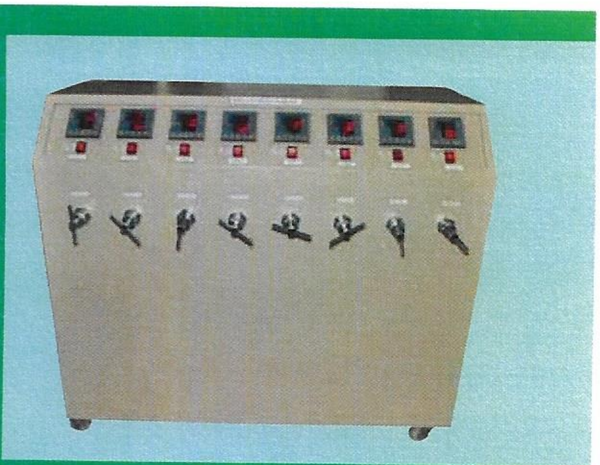
Sr. No	Characteristics	Value	Value
1	Vicat Softening Temperature	>74°C	EN 727
2	Effects on Heating	Depth of crack / delamination, blisters or signs of weld line splitting < 30% of wall thickness around injection point	EN 743 (Method B ; Air)
3	Opacity	Shall not transmit >0.2% of visible light	EN 578
4	Resistance to Internal Pressure of 1 hr at 20°C ; 3.36 x PN	No failure during the test period	ISO / DIS 12092

Chemical Resistance

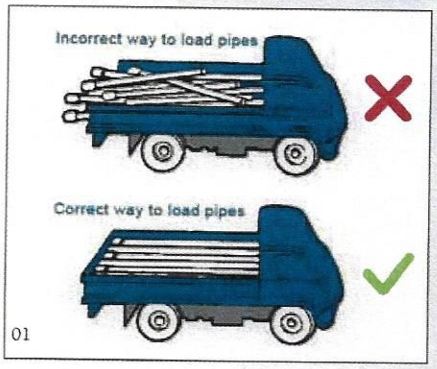
UPVC Pressure Pipe systems are suitable to be used with a number of acids, alkalies, salts and solvents that can be mixed with water.

UPVC Pressure Pipe systems are not resistant to aromatic and chlorinated hydrocarbons.

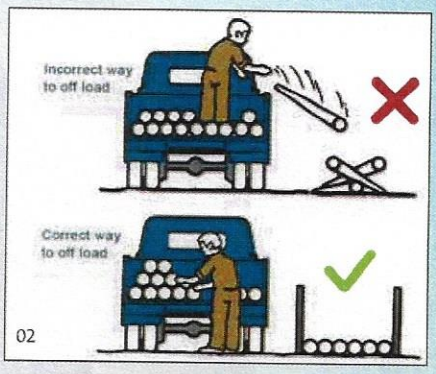
More detailed and specific information is available on pages 32 - 35 & in the British Standard code of practice for plastic pipe work CP 312-3 : 1973



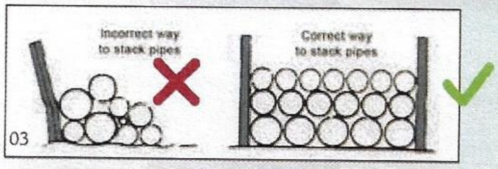
ON SITE STORAGE AND HANDLING


Incorrect way to load pipes
Correct way to load pipes

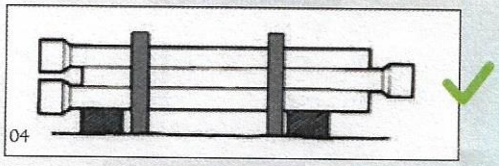
01


Incorrect way to off load
Correct way to off load

02


Incorrect way to stack pipes
Correct way to stack pipes

03



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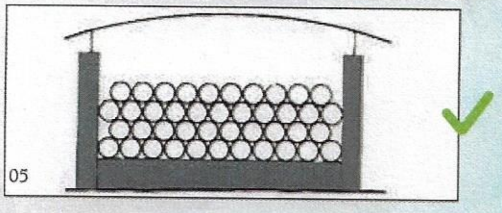


05

Storage

- The pipes should be kept on a flat surface or on level ground free from stones and sharp objects.
- The maximum stack should be 7 layers high under normal conditions and 6 layers high in hot conditions.
- Ideally a stack should contain pipes of the same diameter. If this is not possible nesting of the smaller pipes inside the larger pipes may be done. The larger diameter pipes should always be kept at the bottom of the stack.
- Direct exposure to sunlight (UV rays) can affect the pipes and fittings, causing decolouration and deterioration in the seal rings.
- It is recommended that the pipes should not be exposed to direct sunlight and if kept in open for longer periods of direct sunlight, it should be covered by opaque sheets.
- While storing socketed pipes, it is recommended that alternate layers should have the sockets in the opposite direction.

Handling

- Reasonable care should be taken while handling of pipes. During unloading from vehicles, pipes should not be dropped/mishandled from the vehicle.
- Pipes should never be dragged along hard surfaces. In case of mechanical lifting, avoid using metal chains and hooks in direct contact with the pipes. It is recommended to provide protected slings and padded supports.

Transportation

- Generally UPVC pipes are supplied in prepacked bundles of standard quantity.
- In case loose pipes being transported, the larger diameter and heavier pipes should be placed at the bottom of the load and smaller diameter pipes on top.
- The pipes should be loaded in such a way that the overhang should be less than a meter.

PVC PIPING SYSTEM: Brief Technical Overview

Temperature / Pressure Relationship

The service life of a pipe system is influenced by the relationship between the working temperature and the working pressure. Illustration 'A' below plots, the recommended maximum working pressures in relation to working temperatures, based upon a service life expectancy of 50 years for 15 bar fittings.

It is appreciated, in the context of modern industrial pipe system, reference to service life of 50 years, or even 20 years may be largely irrelevant. Such a time scale is, however, used only as a basis of material provided maximum combinations of pressure and temperature are not exceeded.

ILLUSTRATION A

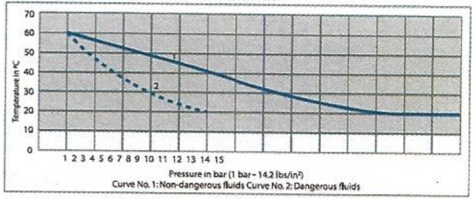
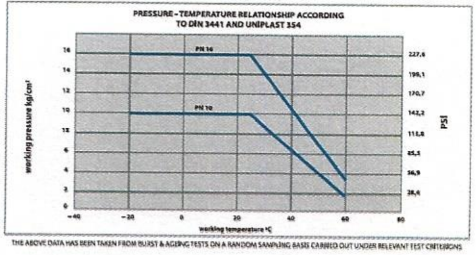


Illustration 'B' below plot, the recommended maximum working pressures in relation to working temperatures, based upon a service life expectancy of 50 years for metric size fittings for 16 & 10 bar fittings.

ILLUSTRATION A



THE ABOVE DATA HAS BEEN TAKEN FROM BURST & AGEING TESTS ON A RANDOM SAMPLING BASIS CARRIED OUT UNDER RELEVANT TEST CRITERIONS

Determining the Pressure Rating of a System

In determining the maximum working pressure of system as whole, it is essential to take into consideration those components in the system which have the lowest pressure rating. PVC pipe, for example, is available with pressure ratings ranging from 6 bar (Class B) up to 15 bar (Class E), and it is frequently the pressure class of the pipe that will determine the performance capability of the whole system.

Pressure ratings of pipe fittings and values are always quoted with and subjected to a given temperature, usually 20° C. They can be used at higher pressures, but it is a fundamental principle in plastics pipe work that if either the temperature or the pressure is increased then the other must be reduced.

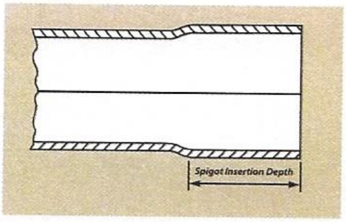
The table below shows the percentage of system's overall pressure rating recommended for various working temperature over 20° C with a fluctuation not exceeding 5° C. Where pipe work is conveying highly corrosive or dangerous liqiuds, or is liable to mechanical abuse, it is recommended that the pressure rating be regarded as that applicable to the next lower pressure class.

Temperature		Percentage of Pressure Rating	W.P. (BAR)
deg. C	deg. F		
20	68	100	15
30	86	90	13.50
35	95	80	12
40	104	70	10.50
45	113	60	9
50	122	45	6.75
55	131	30	4.50
60	140	15	2.25

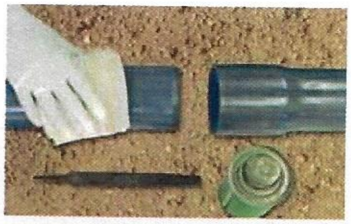
PIPE JOINTING TECHNIQUES

Solvent cement Jointing

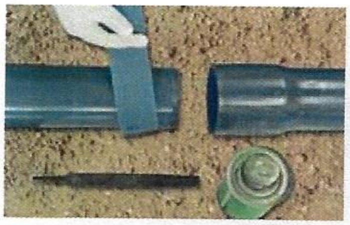
1 The socket and spigot to be jointed shall be thoroughly seen for any damage. Proper attention shall be given to spigot chamfer and socket.



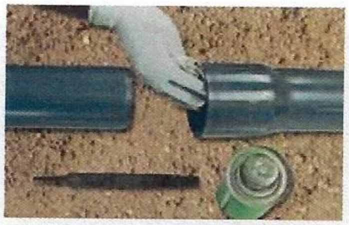
2 The spigot insertion depth shall be measured as the depth from the mouth to the shoulder of the socket. The spigot shall be marked accordingly with marker. (REFER FIG 1 & 3)



3 The mating area of spigot and socket shall be thoroughly cleaned. (REFER FIG 2 & 3)

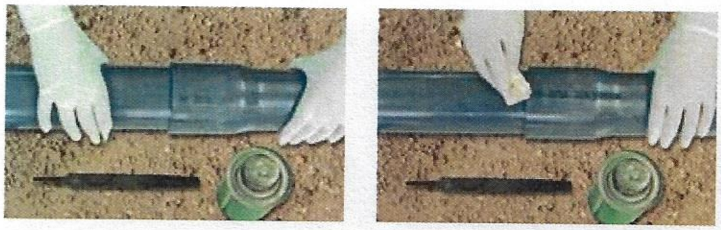


4 Lightly roughen the mating surface of the spigot and socket using clean emery cloth or medium glass paper. (REFER FIG 3)

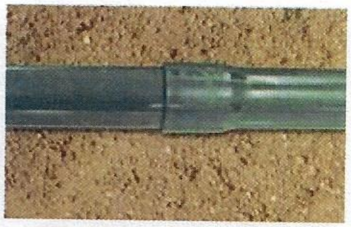


5 Thoroughly clean again the mating surface and ensure that all mating surfaces are clean and completely dry. (REFER FIG 4)

6 Apply uniform coat of solvent cement to the spigot and socket mating surfaces. The cement shall be applied in a lengthwise direction and not with a circular motion. (REFER FIG 5)



7 Immediately following cement application ensure that the pipe is slowly anchored and push the spigot fully in the socket without turning the pipe. The spigot shall be inserted with a steady. Continious motion and held in place for 20 seconds. Remove the excess cement from around the mouth of the socket. (REFER FIG 6 & 7)

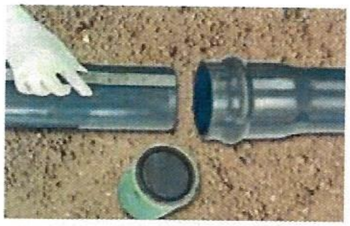


8 Leave the joint undisturbed for five minutes then handle with reasonable care. (REFER FIG 8)

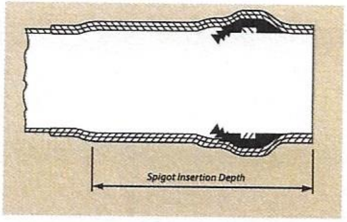
Notes for Solvent Cement :

1) Solvent cement is flammable and shall be used in well ventilated conditions.
2) The solvent in the cement evaporates quickly, so it is recommended to close the tin/container immediately after use.
3) Avoid cleaning fluid be mixed with solvent cement.
4) Don't use brush on which solvent cement has previously hardened.
5) Solvent cement spilled on the pipe surface should be removed immediately.

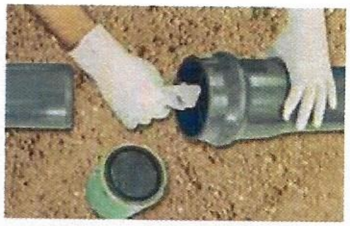
Rubber Ring Jointing



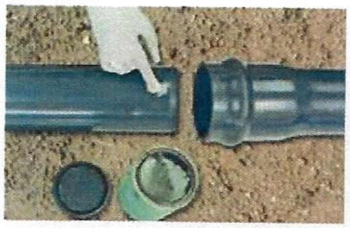
1 The socket and spigot to be joined shall be thoroughly seen for any damage. Proper attention shall be given to spigot chamfer and the sealing ring. The chamfered spigot shall be clean and free from burrs. The sealing ring shall be correctly seated in the socket groove.



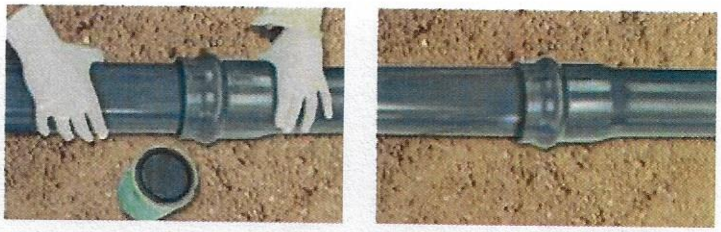
2 The spigot insertion depth shall be measured as the depth from the mouth to the shoulder of the socket. The spigot shall be marked accordingly with marker. If an allowance for expansion is required, this should be deducted from the spigot insertion depth. (REFER FIG 2)



3 The spigot and socket should be thoroughly cleaned. Any grease, dirt and other foreign matter shall be removed from the sealing areas. (REFER FIG 3)



4 The spigot end and sealing ring shall be thoroughly lubricated with the suitable lubricant. The spigot shall be lubricated to the full insertion depth and around it's complete circumference including chamfer area. (REFER FIG 4)



5 Immediately after lubrication, the spigot shall be brought into contact with the socket. The spigot shall be inserted into the socket until resistance from the inner sealing section is felt. Correct allignment at this stage is essential to ensure that the rubber sealing ring is not torn or pinched. (REFER FIG 5)

UPVC INCH SIZE PRESSURE PIPE AND FITTINGS

BS EN ISO 1452-2 ; PN-15(CLASS-E)

UPVC Pressure Pipes are manufactured as per the following dimensions :

Inch size Pressure Pipes : BS EN ISO 1452-2

Size	Mean Outside Dia		Wall thickness		Wall thickness		Wall thickness	
			PN - 15 (CLASS-E)		PN - 12 (CLASS-D)		PN - 9 (CLASS-C)	
	Min	Max	Min	Max	Min	Max	Min	Max
1/2"	21.2	21.5	1.7	2.1	-	-	-	-
3/4"	26.6	26.9	1.9	2.5	-	-	-	-
1"	33.4	33.7	2.2	2.8	-	-	-	-
1 1/4"	42.1	42.4	2.7	3.3	2.2	2.7	-	-
1 1/2"	48.1	48.4	3.1	3.7	2.5	3.0	-	-
2"	60.2	60.5	3.9	4.5	3.1	3.7	2.5	3.0
3"	88.7	89.1	5.7	6.6	4.6	5.3	3.5	4.1
4"	114.1	114.5	7.3	8.4	6.0	6.9	4.5	5.2
6"	168	168.5	10.8	12.5	8.8	10.2	6.6	7.6
8"	218.8	219.4	12.6	14.5	10.3	11.9	7.8	9.0
10"	272.6	273.4	15.7	18.1	12.8	14.8	9.7	11.2
12"	323.4	324.3	18.7	21.6	15.2	17.5	11.5	13.3

UPVC High Pressure Pipes to BS EN ISO 1452-2 Metric series

Size	Mean Outside Dia		Wall thickness		Wall thickness		Wall thickness	
			PN-16		PN-10		PN-6	
	Min	Max	Min	Max	Min	Max	Min	Max
20 mm	20.0	20.2	1.5	1.9	-	-	-	-
25 mm	25.0	25.2	1.9	2.3	-	-	-	-
32 mm	32.0	32.2	2.4	2.9	1.6	2.0	-	-
40 mm	40.0	40.2	3.0	3.5	1.9	2.3	1.5	1.9
50 mm	50.0	50.2	3.7	4.3	2.4	2.9	1.6	2.0
63 mm	63.0	63.2	4.7	5.4	3.0	3.5	2.0	2.4
75 mm	75.0	75.3	5.6	6.4	3.6	4.2	2.3	2.8
90 mm	90.0	90.3	6.7	7.6	4.3	5.0	2.8	3.3
110 mm	110.0	110.3	6.6	7.5	4.2	4.9	2.7	3.2
160 mm	160.0	160.4	9.5	10.7	6.2	7.1	4.0	4.6

WHY CHOOSE MODERN PLASTIC INDUSTRY LLC ?

- Proven research capability and ability to provide products to suit customer application needs.
- Pipes & fittings at a competitive price.
- Technical service and installation backup.
- One stop facility - wide range of pipes & fittings in UPVC (SWR Drainage), UPVC high pressure, CPVC & PP Compression.
- Prompt deliveries in-house manufacturing facilities for all the pipes and fittings in UAE.
- Quality and reliability - according to international standards, Quality management system (ISO 9001 & kite-mark).
- Operational excellence - precision manufacturing according to the standards using state of the art machinery.
- Duty exemption in GCC countries.
- Service - 24 hours customer service.

Means customer satisfaction and operational excellence.....

MPI ATLAS

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UKAS MANAGEMENT SYSTEMS 003

WRAS APPROVED MATERIAL

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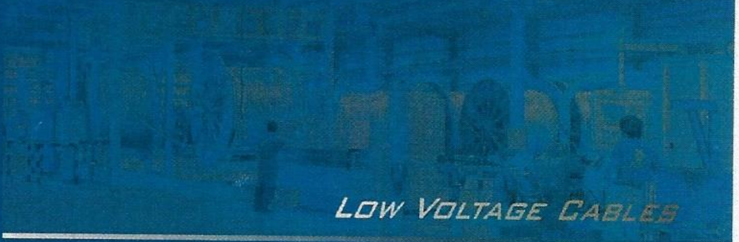


LOW VOLTAGE CABLES

INNOVATIVE
PROCESSES AND
TECHNOLOGY STRATEGIES

XLPE INSULATED, PVC SHEATHED CABLES

COPPER CONDUCTOR STANDARD:BS 5467 0.6/1 kV

STEEL WIRE ARMOURED CABLES

Nominal Area	No. of Wires	Approx. Conductor Diameter	Nominal Insulation Thickness	Nominal Steel Wire Dia.	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight	Standard Packing
mm²	No.	mm	mm	Mm	mm	mm	Kg/Km	meters
3x1.5 rm	7	1.56	0.6	0.9	1.3	13	300	1000
3x2.5 rm	7	2.01	0.7	0.9	1.4	14	390	1000
3x4 rm	7	2.55	0.7	0.9	1.4	15	475	1000
3x6 rm	7	3.12	0.7	0.9	1.4	17	575	1000
3x10 rm	7	4.01	0.7	1.25	1.5	20	850	1000
3x16 rm	7	5.03	0.7	1.25	1.6	22	1110	1000
3x25 sm	7	-	0.9	1.6	1.7	24	1590	1000
3x35 sm	7	-	0.9	1.6	1.8	26	1965	1000
3x50 sm	19	-	1.0	1.6	1.8	29	2440	500
3x70 sm	19	-	1.1	1.6	1.9	32	3200	500
3X95 sm	19	-	1.1	2.0	2.1	37	4390	500
3x120 sm	37	-	1.2	2.0	2.2	41	5250	500
3x150 sm	37	-	1.4	2.5	2.3	46	6740	250
3x185 sm	37	-	1.6	2.5	2.4	50	8050	250
3x240 sm	61	-	1.7	2.5	2.6	55	9990	250
3x300 sm	61	-	1.8	2.5	2.7	60	12100	250
3x400 sm	61	-	2.0	2.5	2.9	67	14970	250

rm	:	**Round Stranded**
sm	:	**Sectoral Stranded**

Standard Colour Code:
3 cores : Red, Yellow, Blue

Color Code based on special request
3 cores : Green / Yellow, Blue, Brown

XLPE INSULATED, PVC SHEATHED CABLES

COPPER CONDUCTOR STANDARD: BS 5467 0.6/1 kV

STEEL WIRE ARMOURED CABLES

Nominal Area	No. of Wires	Approx. Conductor Diameter	Nominal Insulation Thickness	Nominal Steel Wire Diameter	Nominal Sheath Thickness	Approx. Overall Diameter	Approx. Weight	Standard Packing
mm²	No.	mm	mm	mm	mm	mm	Kg/Km	meters
4x1.5 rm	7	1.56	0.6	0.9	1.3	13	350	1000
4x2.5 rm	7	2.01	0.7	0.9	1.4	15	450	1000
4x4 rm	7	2.55	0.7	0.9	1.4	16	550	1000
4x6 rm	7	3.12	0.7	1.25	1.5	19	775	1000
4x10 rm	7	4.01	0.7	1.25	1.5	21	1000	1000
4x16 rm	7	5.03	0.7	1.25	1.6	23	1325	1000
4x25 sm	7	-	0.9	1.6	1.7	26	1925	1000
4x35 sm	7	-	0.9	1.6	1.8	29	2390	1000
4x50 sm	19	-	1.0	1.6	1.9	32	3015	500
4x70 sm	19	-	1.1	2.0	2.1	38	4300	500
4X95 sm	19	-	1.1	2.0	2.2	42	5500	500
4x120sm	37	-	1.2	2.5	2.3	47	7035	500
4x150 sm	37	-	1.4	2.5	2.4	52	8410	500
4x185 sm	37	-	1.6	2.5	2.6	57	10150	250
4x240 sm	61	-	1.7	2.5	2.7	63	12750	250
4x300 sm	61	-	1.8	2.5	2.9	69	15440	250
4x400 sm	61	-	2.0	3.15	3.2	78	20210	250

STEEL WIRE ARMOURED CABLES

5x1.5 rm	7	1.56	0.6	0.9	1.4	14	400	1000
5x2.5 rm	7	2.01	0.7	0.9	1.4	16	515	1000
5x4 rm	7	2.55	0.7	0.9	1.5	18	650	1000
5x6 rm	7	3.12	0.7	1.25	1.5	20	900	1000
5x10 rm	7	4.01	0.7	1.25	1.6	23	1190	1000
5x16 rm	7	5.03	0.7	1.6	1.7	27	1775	1000
5x25 rm	7	6.3	0.9	1.6	1.8	31	2450	1000
5x35 rm	7	7.44	0.9	1.6	1.9	35	3075	500
5x50 rmc	19	8.1	1.0	2.0	2.0	40	4040	500
5x70 rmc	19	9.7	1.1	2.0	2.2	46	5355	500

rm:	**Round Stranded**
rmc:	**Round Stranded Compacted**
sm:	**Sectoral Stranded**

Standard Colour Code:
4 cores: Red, Yellow, Blue, Black
5 cores: Red, Yellow, Blue, Black, Green/Yellow

Color Code based on special request
4 Cores: Blue, Brown, Black, Grey
5 Cores: Green/Yellow, Blue, Brown, Black, Grey

GUIDELINES FOR THE SELECTION OF THE REQUIRED SIZE OF CABLE

The required sizes of cable shall be selected based on the following steps:

Ampacity: Based on the required ampacity and the installation condition, a suitable size of cable can be selected.

Voltage Drop: The suitability of the above selected size shall be cross checked with the voltage drop. If it is within the limit, the selection is ok. Otherwise, the higher size (whose voltage drop suits the requirement) shall be selected. Following is an example for the above:

Example:
150 meters of three core cable, XLPE insulated, PVC sheathed, copper cable installed under ground to carry 100 amperes load, supply voltage 380 V.three phase system 50Hz, Ground temperature 40°C, soil thermal resistivity 2.5 k.m. / W and load factor 1.

Derating Factors:

*35mm^2 cable ampacity =176 amps
*Soil thermal resistivity = 0.71
*Ground temperature = 0.85

Therefore derated current = 106 Amps (176 x 0.71 x 0.85)

Voltage drop(Vap) $= \frac{Vp \times 1000 \times V}{I \times L \times 100}$ V/A/KM

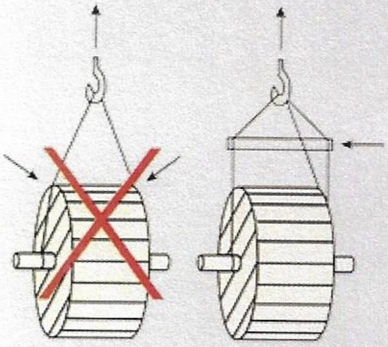
VP = maximum permissible voltage drop (say2.5%)
V = System voltage (Here 380V)
L = Length in meters (Here 150 meter)
Therefore, Vap = $\frac{2.5 \times 1000 \times 380}{100 \times 150 \times 100}$ V/A/KM
= 0.633V/A/KM

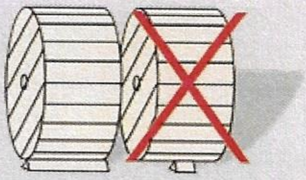
From table on page 52 of this catalogue, the voltage drop of 35 mm^2 XLPE insulated multi core cable is 1.011 V/A/km, which is much higher than the requirement of 0.633 V/A/km. The voltage drop of 70 mm^2 cable is 0.556 V/A/km which is with in the limit. Therefore, the suitable size is 70 mm^2.

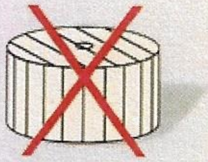
Note:
*** Please refer to the Low Voltage Electrical Guide N.C.I Brochure for finding the Ampacity, Soil Thermal Resistivity and Ground Temperature.**

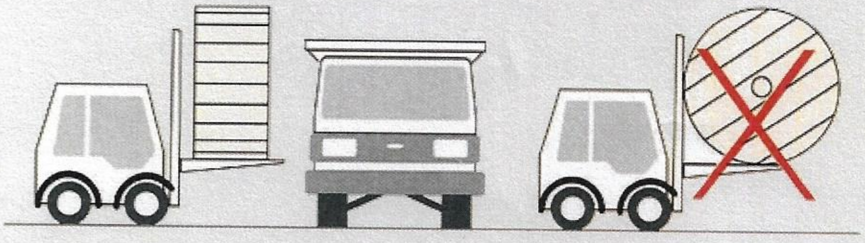
Drum Handling Instruction

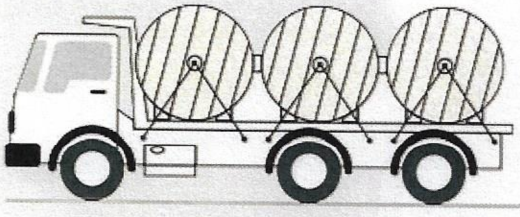
National Cable Industry Cables and Conductors should be installed by trained personnel in accordance with good engineering practices, recognized codes of practice, statutory local requirements, IEE wiring regulations and where relevant, in accordance with any specific instructions issued by the company. Cables are often supplied in heavy cable reels and handling these reels can constitute a safety hazard. In particular, dangers may arise during the removal of steel binding straps and during the removal of retaining battens and timbers which may expose projecting nails.

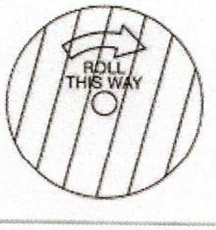




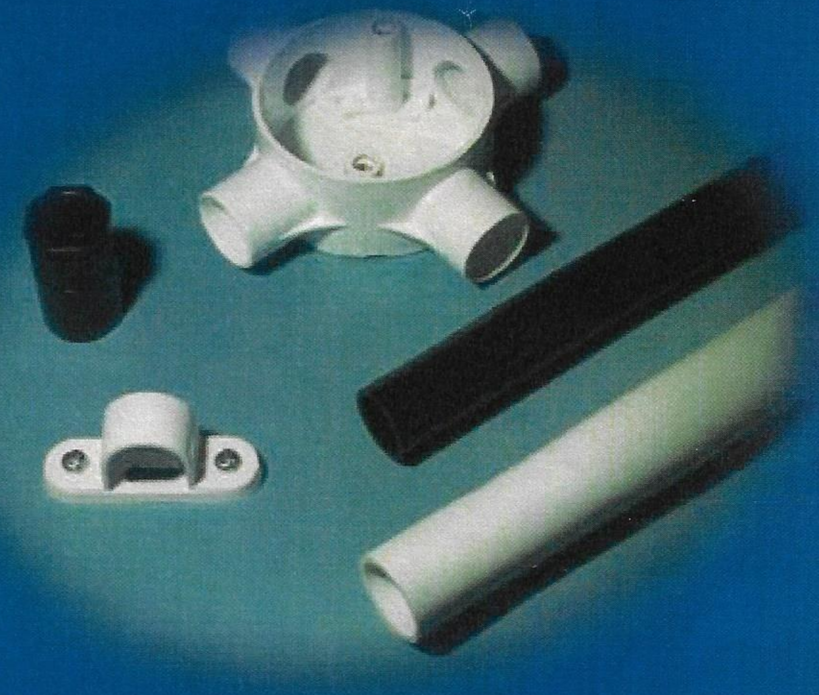








CONDUIT SYSTEMS



DECODUCT®

CABLE MANAGEMENT SYSTEMS

Conduit System

DECODUCT Conduits are manufactured from super high impact uPVC compound suitable to withstand harsh environments. Conduits can be bent with the use of a bending spring.

HEAVY GRADE ROUND CONDUIT-1250N COMPRESSION FORCE

Item code	Nominal Size (O.D.) mm	Minimum Inside Diameter mm	Standard packs Pcs	Standard packs Mtrs	Bulk packs Pcs
DCV 1	16	12.4	50	145	-
DCV 2	20	16.0	20	58	5000
DCV 3	25	20.7	20	58	3200
DCV 4	32	26.5	10	29	1800
DCV 5	38	32.5	10	29	1300
DCV 6	50	43.0	10	29	720

MEDIUM GRADE ROUND CONDUIT-750N COMPRESSION FORCE

Item code	Nominal Size (O.D.) mm	Minimum Inside Diameter mm	Standard packs Pcs	Standard packs Mtrs	Bulk packs Pcs
DCH 1	16	12.8	50	145	-
DCH 2	20	16.5	20	58	5000
DCH 3	25	20.9	20	58	3200
DCH 4	32	27.3	10	29	1800
DCH 5	38	33.1	10	29	1300
DCH 6	50	44.4	10	29	720

LIGHT GRADE ROUND CONDUIT-320N COMPRESSION FORCE

Item code	Nominal Size (O.D.) mm	Minimum Inside Diameter mm	Standard packs Pcs	Standard packs Mtrs	Bulk packs Pcs
DCL 1	16	13.4	50	145	-
DCL 2	20	17.2	20	58	5000
DCL 3	25	21.7	20	58	3200
DCL 4	32	28.5	10	29	1800
DCL 5	38	34.5	10	29	1300
DCL 6	50	45.6	10	29	720

US SCHEDULE 40 CONDUIT

Item code	Trade / Metric Sizes Inch/mm	Dimensions (mm) Maximum Outer Diameter	Dimensions (mm) Schedule - 40 Minimum Wall Thickness	Standard Packs Pieces	Standard Packs Metres
DCS4 - 1	$^{1}/_{2}$" / 16 mm	21.54	2.77	20	60
DCS4 - 2	$^{3}/_{4}$" / 21 mm	26.92	2.87	10	30
DCS4 - 3	1"/ 27 mm	33.66	3.38	10	30
DCS4 - 4	1 $^{1}/_{4}$" / 35 mm	42.47	3.56	5	15
DCS4 - 5	1 $^{1}/_{2}$" / 41 mm	48.56	3.68	5	15
DCS4 - 6	2"/ 53 mm	60.63	3.91	1	3
DCS4 - 7	3"/ 78 mm	89.28	5.49	1	3
DCS4 - 8	4"/ 103 mm	115.57	6.02	1	3
DCS4 - 9	6"/ 155 mm	169.54	7.11	1	3

• Standard Length of 3 metres in grey colour. Other colours and lengths can be produced upon request.